Vol. 894 Number 3

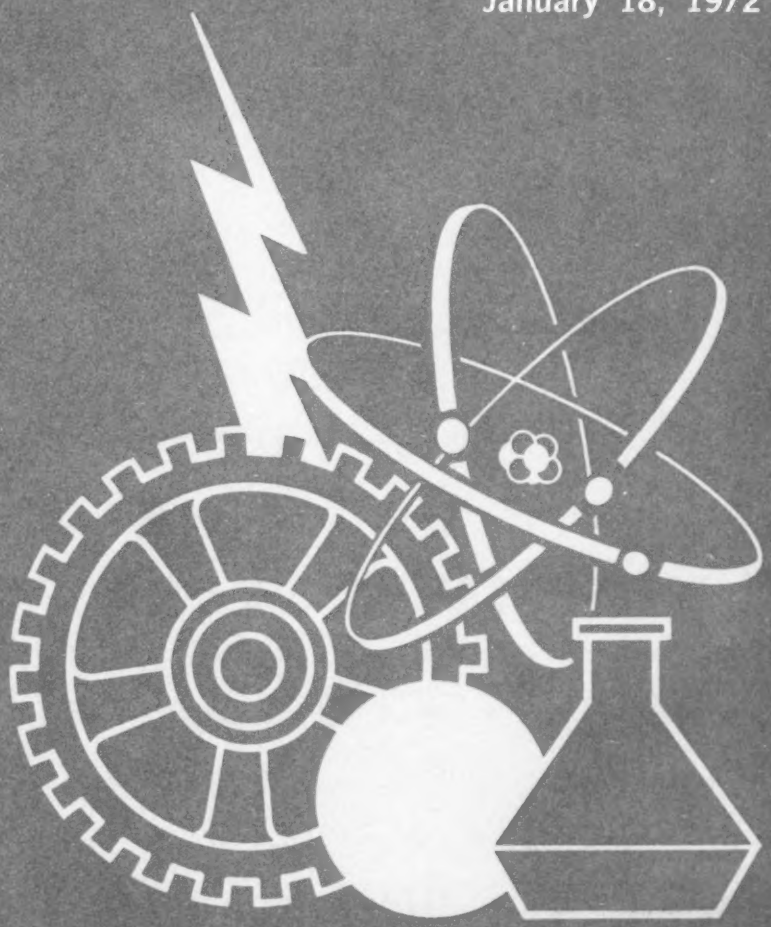
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

January 18, 1972



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 18, 1972 Volume 894 Number 3

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Jan. 18, 1972

3,506,602	3,578,034	3,589,303	3,596,774
3,512,733	3,578,398	3,589,401	3,597,125
3,515,748	3,578,665	3,589,512	3,598,773
3,532,162	3,579,148	3,589,530	3,598,827
3,536,173	3,579,339	3,589,672	3,599,147
3,540,388	3,580,134	3,589,997	3,599,305
3,542,731	3,580,154	3,590,278	3,600,064
3,548,642	3,581,458	3,591,094	3,600,308
3,548,643	3,582,106	3,591,432	3,600,394
3,554,439	3,582,309	3,591,509	3,600,666
3,557,142	3,582,638	3,591,921	3,600,720
3,557,184	3,582,702	3,592,396	3,600,732
3,557,609	3,582,876	3,592,664	3,601,144
3,558,666	3,583,581	3,592,670	3,601,344
3,558,864	3,583,761	3,592,850	3,601,798
3,560,346	3,585,319	3,592,931	3,601,807
3,561,380	3,585,791	3,593,105	3,602,245
3,562,044	3,585,891	3,593,688	3,602,526
3,562,192	3,585,917	3,594,170	3,602,550
3,562,208	3,586,071	3,594,335	3,602,570
3,565,760	3,586,101	3,594,357	3,602,625
3,566,125	3,586,501	3,594,741	3,602,941
3,569,802	3,587,318	3,594,896	3,602,982
3,572,736	3,587,726	3,595,047	3,603,129
3,574,811	3,588,325	3,595,183	3,603,582
3,575,219	3,588,351	3,595,386	3,603,697
3,576,242	3,588,443	3,595,408	3,603,704
3,576,800	3,588,473	3,595,673	3,605,117
3,576,841	3,588,574	3,595,761	3,605,227
3,577,402	3,588,636	3,596,107	3,605,254

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 28, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-13-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-02-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-13-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-12-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-06-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	4-28-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-01-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-11-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-11-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	10-19-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-26-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-29-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-05-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	12-28-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	11-02-70

Expiration of patents: The patents within the range of numbers indicated below expire during January 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,608,434 to 2,700,763, inclusive
Plant Patents..... Numbers 1,339 to 1,344, inclusive

REISSUES

JANUARY 18, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,275
WATER CLARIFICATION PROCESS

Mahmoud T. Dajani, by Nalco Chemical Co., assignee, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Original No. 3,409,547, dated Nov. 5, 1968, Ser. No. 508,159, Nov. 16, 1965. Application for reissue Oct. 30, 1970, Ser. No. 85,832

Int. Cl. B01d *21/01*

U.S. Cl. 210—54 **5 Claims**

1. A process for clarifying water which has solid materials suspended therein and which has at least 0.1 p.p.m. of residual chlorine comprising the steps of adding a minor amount of a *condensation* polymer *of ammonia and ethylene dichloride* which contains a plurality of basic nitrogen sites in form of quaternary groups to said water to coagulate said suspended solids, and thereafter separating said solids from said water.

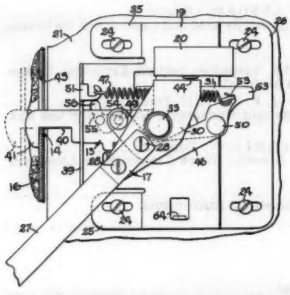
27,276
APPLIANCE LATCH

Karl H. Erickson, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Original No. 3,476,424, dated Nov. 4, 1969, Ser. No. 622,142, Mar. 10, 1967. Application for reissue Mar. 13, 1970, Ser. No. 19,518

Int. Cl. E05c *5/03, 19/10*

U.S. Cl. 292—113 **8 Claims**



A latch for a self-cleaning oven and comprising a lever operable to move a bolt first along an angular path into engagement with a strike on the oven door and then inwardly along a straight path to a latched position to draw the door in tightly against the oven cabinet. The motion of the lever is transmitted to the bolt by a pivoted driving link which, with the aid of a spring, prevents the bolt from moving inwardly to its latched position unless the door is closed and the bolt actually engages the strike when the bolt is moved along the angular path.

27,277
MANUFACTURE OF HOLLOW ARTICLES

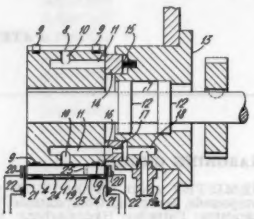
David T. N. Williamson, London, England, assignor to Molins Limited, London, England

Original No. 3,266,295, dated Aug. 16, 1966, Ser. No. 291,905, July 1, 1963. Application for reissue Apr. 7, 1970, Ser. No. 26,447

Int. Cl. G01n *15/08;* **G01m** *3/02*

U.S. Cl. 73—38 **29 Claims**

Apparatus for testing cigarettes, rod-like articles and in particular cigarette wrappers for leaks. The wrappers are tested while traveling sideways on a conveyor past a rotary drum testing station. A pressure differential is created radially across the wrapper, preferably by applying suction



to a chamber around the wrapper. The arrangement is such that the presence of a leak is indicated by an increase in the air flow through the wrapper.

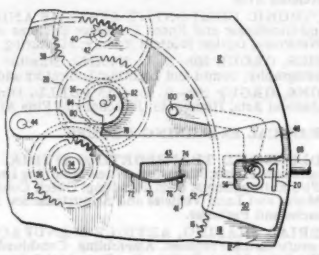
27,278
WATCH CALENDAR MECHANISM

Donald W. Brasher, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

Original No. 3,353,348, dated Nov. 21, 1967, Ser. No. 505,658, Oct. 29, 1965. Application for reissue Oct. 23, 1969, Ser. No. 869,977

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **19 Claims**



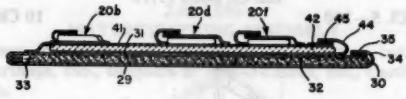
The calendar timepiece has a calendar ring continuously driven from a dial train as to advance $\frac{1}{31}$ of a revolution during each 24 hour period of watch operation. A shutter mechanism is continuously driven by a cam wheel in the dial train such that the shutter continuously follows advancing indicia on the calendar ring for twenty-four hours, whereupon a cam follower portion on the spring-biased shutter mechanism moves so that the shutter snaps back to the next following date and immediately begins to follow movement of the next date on the calendar ring. A two-position stem is provided which declutches the shutter mechanism from the dial train upon longitudinal movement of the stem from one position to another so that the calendar ring can be set in either direction by rotation of the stem.

PATENTS

GRANTED JANUARY 18, 1972

GENERAL AND MECHANICAL

3,634,889
SURVIVAL ARMOR UNIT
Robert F. Rolsten, 1436 Adirondack Trail, Dayton, Ohio
Filed Dec. 29, 1969, Ser. No. 888,462
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **3 Claims**



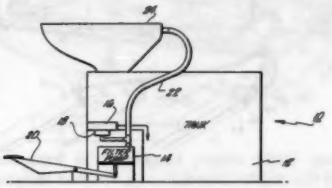
A garment suitable for military and/or police personnel comprises a jacket member constructed of fire retardant cloth, having front and back sections joined along shoulder covering parts, and at least one open side for donning the jacket with a flap extending from the back section partly around and securable to the front section. The jacket member has a plurality of integral external compartments receiving and retaining individual items such as survival kits of food, flares, radio, etc. A ballistic fragmentation protective member, preferably a removable fragmentation protective cloth, has a cover of waterproof material such as vinyl chloride, and is positioned within a pocket formed on the jacket member to cover a major portion of the front, or the front and back of the torso of the wearer. A removable antiballistic armor unit, as of ceramic, is held in a separate pocket means on the jacket member which positions the armor unit across the front of the torso of the wearer, and a separate such unit across the back of the wearer where rear protection is needed. The pockets may include individual fasteners through which the fragmentation protective cloth and/or the armor units can be removed by the wearer when they are not needed.

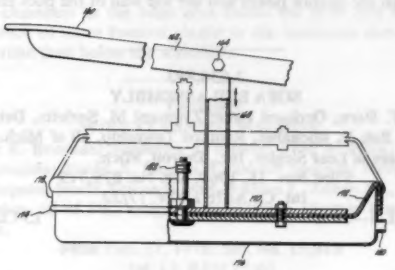
3,634,890
METAL COINS WHICH CAN BE DISTINGUISHED AND SEPARATED FROM ONE ANOTHER BY PHYSICAL METHODS RESPONDING TO MAGNETIC PROPERTIES
Hans Conradt, and Hugo Zoebe, both of Altena, Westpnalia. Germany, assignors to Vereinigte Deutsche Metallwerke AG
Filed May 17, 1968, Ser. No. 729,904
Claims priority, application Germany, May 20, 1967, P 15 58 703.8
Int. Cl. B32b *15/00*
U.S. Cl. 29—199 **4 Claims**

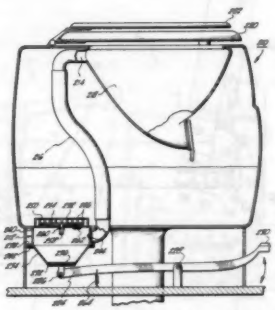
In order to make metal disks, especially coins, distinguisha ble and separable from one another and from disks consisting of other materials on the basis of their magnetic properties, they are made according to the invention of one or more nonmagnetic layers, which consist preferably of a copper-nickel alloy containing 5 to 60 percent nickel, and of one or more layers of magnetic metal, especially nickel, in special, very specific thickness ratios between the magnetic layers and the overall thickness of the metal disks in question.

3,634,891
SELF-CONTAINED RECIRCULATING SANITARY SYSTEM
James M. Kemper, Los Angeles, Calif., assignor to Monogram Industries, Inc., Log Angeles, Calif.
Filed Aug. 19, 1970, Ser. No. 65,095
Int. Cl. E03d *1/00, 3/00, 5/00*
U.S. Cl. 4—10 **11 Claims**

A recirculating sanitary system is described which includes an improved filter and pump assembly to provide a source of flushing liquid. A linkage permits pedal or manual actuation of a diaphragm pump which, when driven, supplies the flush-





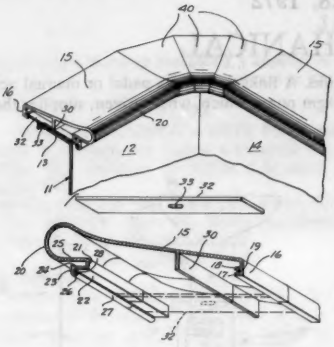


ing liquid to a bowl. A portion of the flushing liquid is diverted to drive a special pump which injects a deodorizing chemical into the storage tank.

3,634,892
SWIMMING POOL WALL COPING
John K. Rains, 1600 Seabreeze Blvd., Ft. Lauderdale, Fla.
Filed Dec. 19, 1969, Ser. No. 886,672
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.21 **12 Claims**

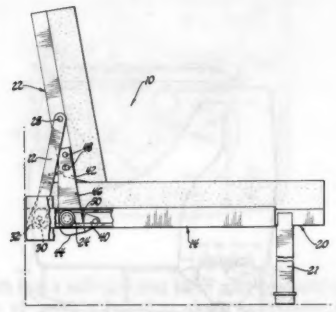
A coping for the top of a swimming pool wall. The coping consists of successive cap segments, each having a rigid grooved outer flange and an inner resilient flange having a locking groove facing the groove of the rigid flange. The segments are snapped on spaced elongated anchor plates secured transversely on the top wall of the pool enclosure. The segments are provided with locking recesses to lockingly

receive the enlarged marginal bead of a waterproof pool liner, or alternatively, the liner may be clampingly secured



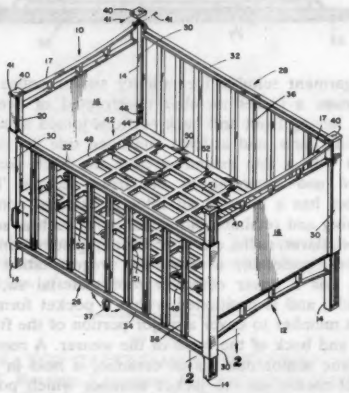
between the anchor plates and the top wall of the pool enclosure.

3,634,893
SOFA BED ASSEMBLY
John F. Hern, Orchard Lake; Zygmunt M. Surletta, Detroit, and Bob D. Michaluk, Redford Township, all of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.
Filed Nov. 25, 1969, Ser. No. 879,719
Int. Cl. A47c *17/14, 17/22*
U.S. Cl. 5—37 R **13 Claims**



A sofa bed assembly including a support means, a seat frame, a back frame, and connection means supporting the frames on the support means for pivotal movement relative to one another and movement between an upright seat position and a lowered bed position. A pair of reaction plates extend from the back frame and a pair of cam members are rotatably connected to the seat frame in a pendulum manner and include lower cam surfaces which engage the top surfaces of the reaction plates upon upward pivotal movement of the seat frame when the bed position so that upon downward movement thereafter the back frame is moved to the upright seat position. Upon slight upward pivotal movement of the seat frame when in the seat position, the cams will fall under the force of gravity to a release position whereby the frames may be moved to the bed position. There is also included a latch means comprising a flange extending from the support means to coact with a slot in a rear member of the seat frame. The slot is disposed in an overlapping position above and rearwardly of the flange when the assembly is in the seat position whereby the flange may be moved through the slot to the overlapping position as the frames are moved to the seat position to prevent movement of the frames by coaction of the flange and the rear member of the seat frame until the seat frame is pivoted upward slightly to align the slot with the flange whereby it may be moved forwardly to move the rear member forwardly of the flange.

3,634,894
CRIB CONSTRUCTION
Richard L. Harbison, Crawfordsville, Ind., assignor to Ingress Manufacturing Corp., Crawfordsville, Ind.
Filed Dec. 12, 1969, Ser. No. 884,411
Int. Cl. E03d *11/10*
U.S. Cl. 5—100 **10 Claims**



A child's crib having floor-supported ends interconnected by sides at least one of which is vertically adjustable. The sides and at least the major parts of the ends are unitary plastic moldings, and are formed with integral tongue and groove portions through which the ends are operatively connected to the sides. A one-piece mattress support vertically adjustable on the crib-ends is a one-piece plastic molding providing a rigid border frame, a gridlike center portion, and spaced elastic connections between the center portion and the ends and sides of the border frame.

3,634,895
JOGGING BOARD
Frank M. Childers, 314 Turngate Drive, Bethel Park Borough, Pa.
Filed Apr. 10, 1969, Ser. No. 814,921
Int. Cl. A47c *23/00*
U.S. Cl. 5—345 **10 Claims**

A jogging board is provided of laminated construction utilizing a lower cushioned base member secured to a rigid

upper platform member. Desirably, a top nonskid layer is provided so that a jogger will not slip upon the jogging board.

Preferably, the bottom-cushioned layer is of the order of 1 to 2 inches of foam rubber, or other suitable elastomeric material, for example. The rigid platform member may, for example, be of ½ to ¾-inch plywood, and the nonskid upper or top layer may be of carpeting, or other nonskid material.

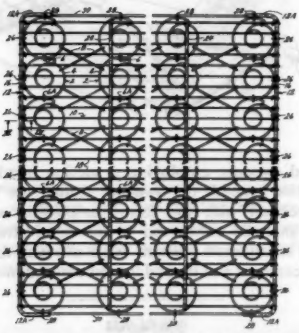
The jogging board of the present invention is portable, and may be placed in an upright position behind a door, or easily stored when not in use. A particularly advantageous and convenient size has been found to be approximately 24 inches by 24 inches and of rectangular configuration.

3,634,896

MATTRESS SPRING ASSEMBLY

Thomas W. Platt, and Robert D. MacMorran, both of Carthage, Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed Jan. 12, 1970, Ser. No. 2,278
Int. Cl. A47c *23/04*
U.S. Cl. 5—354 **6 Claims**



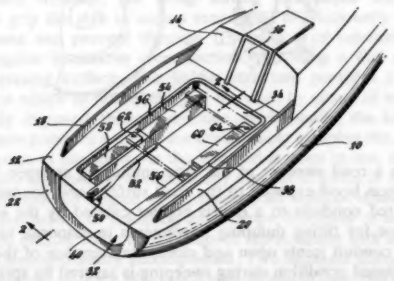
A mattress spring assembly consisting of a spring base including relatively widely spaced spring members defining a generally planar load-supporting surface, and a padding insulator sheet reinforced by relatively closely spaced wires overlying said spring base, said spring base and insulator sheet being so interrelated that the latter substitutes for and performs the functions of certain elements of the former, such as the border wires and interspring ties normally forming elements of the spring base, thereby permitting a simpler, more economical overall combination.

3,634,897

BOAT WITH INTEGRAL PRAM

John Cuccio, 19 Woods Grove Road, Westport, Conn.

Filed Sept. 15, 1969, Ser. No. 857,910
Int. Cl. B63b *35/00*
U.S. Cl. 9—1 R **9 Claims**



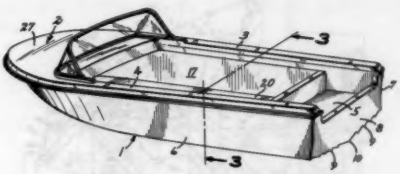
There is disclosed a boat wherein the cockpit is detachable and forms a pram.

3,634,898

PLASTIC BOAT CONSTRUCTION

Earl E. Geiger, Edina, Minn., assignor to Larson Industries, Inc., Edina, Minn.

Filed Apr. 23, 1970, Ser. No. 31,265
Int. Cl. B63b *5/24*
U.S. Cl. 9—6 **7 Claims**



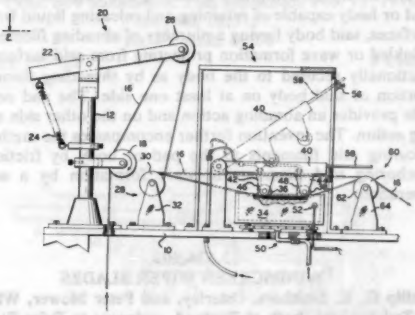
Boats constructed of reinforced plastic which are self-buoyant. Fiberglass boats (e.g., runabouts) which will float in an upright position when filled with water have their hulls constructed in part-at-least as foamed-core sandwich panels or laminates. They are characterized by the absence of flotation chambers in the bilge area below the floor and by the presence of more foamed plastic in the laminates above the waterline than below the waterline.

3,634,899

WIRE-CLEANING MACHINE

Leon E. Brennan; Frederick J. Mower; Fred A. Place, all of Towanda; David A. Shanks, Granville Summit; Neville H. Simpson, North Towanda, and William L. Zaner, Sr., Wyalusing, all of Pa., assignors to Sylvania Electric Products, Inc.

Filed Feb. 27, 1970, Ser. No. 15,010
Int. Cl. B21f *21/00*
U.S. Cl. 15—4 **7 Claims**



An apparatus for continuously cleaning refractory metal wire is described which comprises a base, an upright standard for a wire supply, a plurality of containers, a tension control device, means for guiding wire into and out of the containers, and a means for collecting wire.

3,634,900

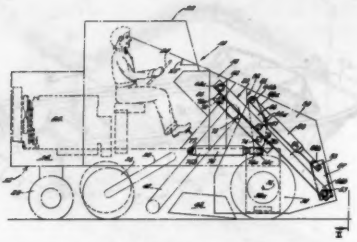
STREETSWEEPER CONSTRUCTION AND LIFT MECHANISM

Ernest F. Prescott, and Donald R. Palmiter, both of Elgin, Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Aug. 11, 1969, Ser. No. 849,017
Int. Cl. E01g *1/02*
U.S. Cl. 15—84 **11 Claims**

Efficient and easily controlled vertical swinging movement of a refuse receptacle for a streetsweeper apparatus is made

possible by a sweeper frame construction cooperating with a pair of efficient lifting linkage mechanisms each of which comprise only five linkage elements arranged to form two interacting parallelograms that allow a first power-actuated one



of said linkage members to lift the refuse receptacle while maintaining it at a constant attitude and a second power-actuated one of said links to tilt the refuse receptacle to dump it.

3,634,901

COMBINATION SPONGE AND SCOURING DEVICE AND METHOD OF MAKING THE SAME

Fred L. Landsberg, 600 Hylan Blvd., Grasmere, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,438
Int. Cl. A47l *13/16, 17/08*
U.S. Cl. 15—118 **4 Claims**

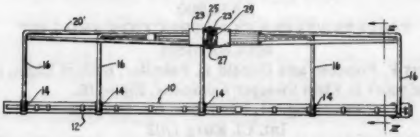
The invention comprises a flexible and resilient absorbent pad or body capable of retaining and releasing liquid from its surfaces, said body having a plurality of abrading filaments in crinkled or wave formation projecting from said surface and frictionally secured to the body as by threading through a portion of said body on at least one side. The pad on said side provides an abrading action and on the other side a wiping action. The invention further encompasses the method of securing said filaments to the pad or body by frictionally anchoring said filaments in wave formation by a sewing operation.

3,634,902

WINDSCREEN WIPER BLADES

Philip G. K. Smithers, Osterley, and Peter Mower, Whitton, Twickenham, both of England, assignors to Trico-Folberth Limited, Brentford, England

Filed June 4, 1970, Ser. No. 43,454
Claims priority, application Great Britain, June 10, 1969, 29,296/69
Int. Cl. B60s *1/40*; A47l *1/02*
U.S. Cl. 15—250.42 **5 Claims**



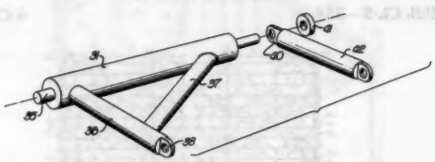
A wiper blade assembly includes a pressure distributing superstructure consisting of articulated levers, an arm attaching clip pivotally secured centrally of the blade to the uppermost levers and a wiping unit. The wiping unit includes an elongate flexible backing strip supporting a rubber or rubberlike wiping element. The wiping unit is offset laterally from the superstructure and inwardly toward the windshield and is secured to the superstructure by laterally extending connecting arms which also serve to distribute the applied arm pressure to longitudinally spaced points along the length of the wiper unit.

3,634,903

ROAD SWEEPER SUCTION HOOD DRAFT CONNECTION

Gregory J. Larsen, Claremont, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Nov. 13, 1969, Ser. No. 876,440
Int. Cl. E01h *1/08*
U.S. Cl. 15—340 **7 Claims**



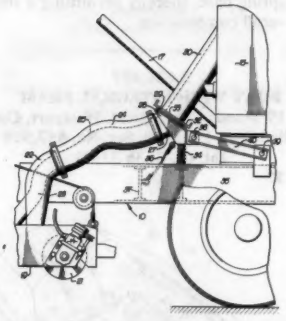
In a road sweeper employing a suction hood carried by caster wheels beneath the sweeper frame, the hood has a draft connection with the frame employing a suspended transverse shaft so connected to the hood structure as to maintain it in centered position while allowing the hood vertical displacements and limited lateral oscillations.

3,634,904

ROAD SWEEPER SUCTION AND DIRT CHAMBER CONNECTION

Gregory J. Larsen, Claremont, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Nov. 20, 1969, Ser. No. 878,326
Int. Cl. E01h *1/08*
U.S. Cl. 15—340 **14 Claims**



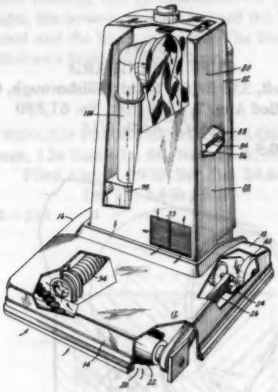
In a road sweeper of the type employing an open bottom suction hood exposed to the road surface and connected by jointed conduits to a debris hopper carried by the sweeper frame for tilting dumping movements in response to which the conduit joints open and close, maintenance of the joints in closed condition during sweeping is assured by spring urging of the lower movable joint sections upwardly against the upper sections while maintaining the sections in axial alignment.

3,634,905

ELECTRIC VACUUM CLEANER CONSTRUCTION

Wilton E. Boyd, Mayfield Heights, Ohio, assignor to General Electric Company

Filed Oct. 27, 1969, Ser. No. 869,707
Int. Cl. A47l 9/22
U.S. Cl. 15—350 8 Claims



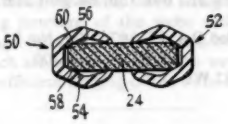
An electric vacuum cleaner construction wherein an electric motor, a suction fan, and a filter bag are positioned within an upper housing and a unique arrangement is provided for pivoting the upper housing to a generally U-shaped vacuum cleaner base.

3,634,906

TYPIST'S OR DRAFTSMAN'S ERASER

Herbert G. Lehmann, 5 Kent Road, Easton, Conn.

Filed Mar. 10, 1970, Ser. No. 18,082
Int. Cl. B43l 19/00
U.S. Cl. 15—434 1 Claim



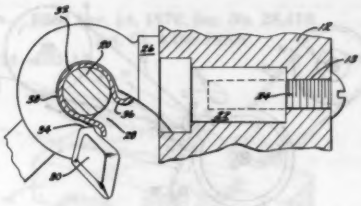
A typist's and draftsman's eraser comprising an elongate slab of rubberlike erasing material and a semirigid holder structure therefor, the latter having channelled sections which grip the slab in such a manner as to frictionally seize the same and prevent slippage. The slab is of substantially rectangular transverse cross section, providing a thin elongate erasing surface. The holder structure provides a stiff body in which to house and grip the slab, by virtue of its oppositely disposed channel sections. Additionally, the holder structure provides a means for comfortably grasping the erasing device in the hand. As the slab end is worn in use, it can be easily and quickly advanced any number of times to maintain the desired degree of protrusion, all without disassembling the holder or releasing any clamps. Removal of an exhausted erasing slab and subsequent replacement with a new one is similarly easily accomplished. Two separate slabs may be employed in place of a single slab, in which case two functional erasing ends are provided.

3,634,907

NONVIBRATING PULL FOR DOORS, DRAWERS, AND THE LIKE

W. Doyle Watt, Jr., Grand Rapids, Mich., assignor to Keller Brass Company, Grand Rapids, Mich.

Filed Feb. 17, 1969, Ser. No. 799,860
Int. Cl. A47b 95/02
U.S. Cl. 16—123 5 Claims



This disclosure relates to nonvibrating pulls for cabinets doors and drawers, the pulls having a stud member adapted to be attached to a support, a head member on the stud, and a handle. A socket is formed in one of the head members and the handle, and a journal is formed in the other of the head member and the handle wherein the journal is positioned within the socket so that the handle is rotatable supported by the stud. A resilient lining means is positioned within the socket and at least partially surrounding the journal so as to permit rotation of the journal within the socket but to prevent rattling or vibration of the journal within the socket.

3,634,908

VENT-CUTTING TOOL

Harold F. Chamberlain, New Haven, Conn., assignor to Jarvis Corporation, Hartford, Conn.

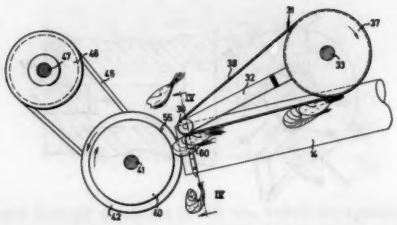
Continuation-in-part of application Ser. No. 715,245, Mar. 22, 1968, now abandoned. This application Feb. 11, 1970, Ser. No. 10,375
Int. Cl. A22c 21/06
U.S. Cl. 17—11 8 Claims

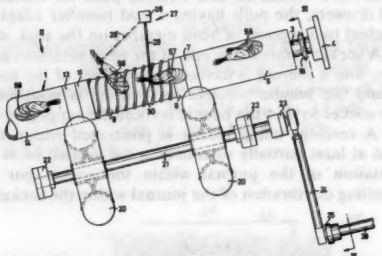
A cutter apparatus suitable for use in processing poultry or the like, comprising a hollow cylindrical cutter having a cutting surface at one end thereof, a guide shaft having a portion thereof positioned within the confines of said cutter and another portion thereof extending beyond the cutting surface of said cutter, and means for rotating said cutter.

3,634,909
SHRIMP-PEELING MACHINE

Erik Hedeager Matthiesen, Langemoseuej 26, 2880 Bagsvaerd, Denmark

Filed July 22, 1969, Ser. No. 843,705
Claims priority, application Denmark, Aug. 6, 1968, 3790/68; Feb. 19, 1969, 929/69
U.S. Cl. 17—73 32 Claims



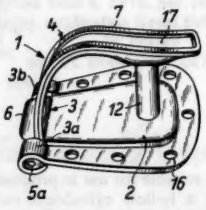


A machine for peeling shrimps, in which shrimps are advanced in a channel formed by two counterrotating rollers. A shrimp is aligned so that its ventral side faces downwards in the channel, and while the shrimp is pressed down into the channel its dorsal shell is loosened from the meat by means of knives rotating with the rollers. After that, a longitudinal pull is exerted on the shrimp to separate its head from the edible meat. The shrimp may also be aligned in the head-to-tail direction. The aligning means may be mechanical or comprise liquid jets.

3,634,910
FASTENER FOR CLOTHING

Charlotte Keskari, Kelkheim, Taunus, Germany, assignor to L. Keskari & Co., Hamburg, Germany

Filed May 18, 1970, Ser. No. 38,320
Claims priority, application Germany, June 3, 1969, P 19 28 317.1
Int. Cl. A44b *13/00*; A43c *11/00*
U.S. Cl. 24—69 SK 5 Claims

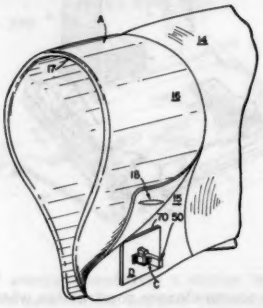


The fastener comprises a baseplate, a pin fixed on the baseplate and projecting therefrom, a spring mounted at the baseplate and a two-armed lever pivoted at the baseplate. The lever is forced by the spring with its long arm into engagement with the pinhead. A recess and a groove are formed on the underside of the long lever arm, the recess being eccentrically arranged with respect to the pin. The pinhead engages the groove under action of the spring and snaps into the recess with additional closing pressure exerted on the long lever arm. The fastener allows a secure closure of fur coats and avoids damage of the fur.

3,634,911
CUFF LINK GUARD

Sidney F. Mobell, 330 Bridge Road, Hillsborough, Calif.

Filed Aug. 7, 1970, Ser. No. 61,880
Int. Cl. A44b *1/18*
U.S. Cl. 24—90.5 10 Claims

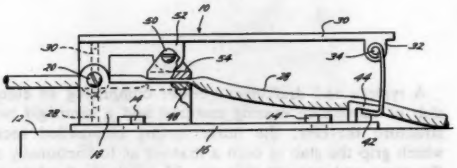


A semirigid plate for securing cuff links is provided with an aperture in the shape of a Greek cross. The plate is adaptable for keying the backs of conventional cuff links through the said aperture. When the plate is either pocketed in or placed between the folds of a shirt cuff and keys the cuff link's back, the securing of a cuff link is improved.

3,634,912
QUICK OPENING AND CLOSING LINE CLAMP

Lovick A. Peters, Jr., Box 150, Sargent Star Road, Bay City, Tex.

Filed Oct. 15, 1970, Ser. No. 81,070
Int. Cl. F16g *11/00*
U.S. Cl. 24—132 WL 3 Claims



A line clamp which quickly and readily grips and releases a lien, cable, rope and the like including a base arranged to be secured to a dock, boat or other object, a lever pivotally mounted on the base adjacent one end, a pair of coacting jaws shaped to permit the line, cable or rope to be drawn between them when released and to securely grip the line, cable or rope between them when in gripping position, one jaw extending from the base toward the lever, the other jaw being pivotally secured to the lever and extending toward the base and the other jaw, and a spring latch releasably and resiliently latching the lever to the base at the other end. Guide means are provided for guiding the line, rope or cable

between the jaws. These may take the form of openings in the pivot means pivotally securing the lever to the one end and the spring latch at the other linearly aligned with the jaws to permit the line, cable or rope to extend through these openings and between the jaws. With the spring latch released and the lever extended, a line, cable or rope can be drawn through the line clamp and between the jaws and clamped where desired, by simply pressing the lever toward the base and latching the spring latch. To release the line, cable or rope, the lever is pressed toward the base, the spring latch released and the lever extended. The line, cable or rope may be withdrawn from the line clamp.

3,634,913

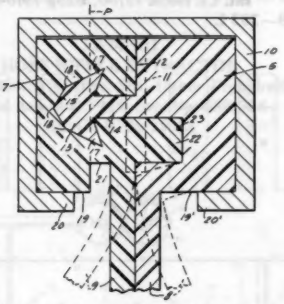
HINGED FLEXIBLE STRIP CLOSURE

Steven Ausnit, 124 East 61st St., New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,645

Int. Cl. A44b *19/00*

U.S. Cl. 24—201 **10 Claims**



A hinged flexible strip closure having complementary fastener strips and wall webs connected thereto, with the strips and webs meeting along a common parting plane, and interlock hook structure extending across the plane from one of the strips into a complementary interlock recess in the other strip, a closing and separating slider being engageable with the strips and having retainer flanges engaging with shoulders adjacent to the webs, there being hinge grooves in said strips along juncture of the webs with the strips but avoiding thinning of the webs and the retainer flanges having inner edges which are so spaced from the web as to avoid interference with efficient hinging of the webs at the grooves.

3,634,914

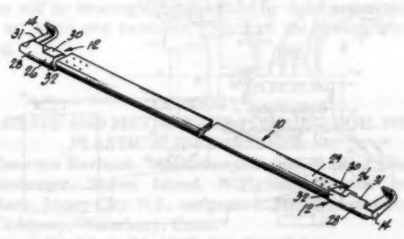
GIRT BAR

Leonard Schroedter, La Palma, Calif., assignor to McDonnell Douglas Corporation

Filed Nov. 28, 1969, Ser. No. 880,532

Int. Cl. A44b *17/00*; E05d *1/06*; B64c *1/22*

U.S. Cl. 24—201 **3 Claims**



A mounting and latching device for use with an emergency evacuation slide carried by an aircraft. The device includes a mounting bar having locking members at each end thereof and a positioning mechanism for placing the locking members in a secured position within a fitting which is secured to a door of the aircraft, or a locked position within a fitting which is secured to the floor of the aircraft.

3,634,915

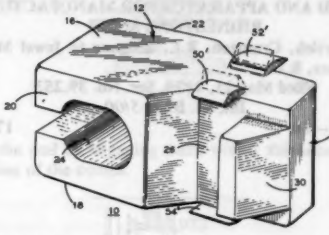
ZIPPER TOOTH

Herbert Alberts, Rua Capitao Luis Ramos, 312 Sao Paulo, Brazil

Filed Apr. 14, 1970, Ser. No. 28,410

Int. Cl. A44b *19/04*

U.S. Cl. 24—205.13 **4 Claims**



A zipper tooth has a body portion with an opening at one end for connection to a tape to form a zipper stringer of a slide fastener. At the other end of the body portion is an engaging head. Just behind the engaging head are a pair of grooves, one on each side of the body portion. The grooves are contoured to accommodate portions of the engaging heads of other similar zipper teeth. At each end of each of the grooves are outwardly extending tapered projections. The projections are rolled over to provide endwalls for the grooves so that a cavity is formed for locking accepting portions of engaging heads of other zipper teeth.

3,634,916

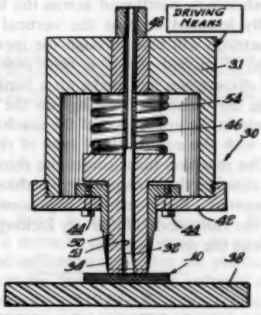
CUTTING HEAD FOR PRODUCTION OF CERAMIC PARTS

Freas C. Kinney, Edison, N.J., assignor to Gulton Industries, Metuchen, N.J.

Filed Dec. 30, 1968, Ser. No. 787,858

Int. Cl. B26d *1/26*

U.S. Cl. 83/124 **4 Claims**



A tool for cutting soft pliable materials which have thixotropic properties like that of clay or raw ceramic materials. The tool includes a cutting member which has a cutting edge and a side which has an extremely short material-engaging side portion facing the severed surface of the body of the

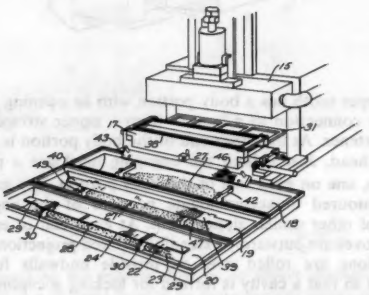
material which is to form the finished article involved (as distinguished from the shavings or pieces of waste material). The short material-engaging side portion of the tool is most advantageously formed by machining the cutting edge at an angle so the side thereof referred to slopes away from the severed surface of the material being cut. Thus, an insignificant portion of the cutting edge contacts the useful severed surface of the material being cut which avoids smearing, flowing and/or deforming of the material being cut. Most advantageously a resilient support surface is provided for receiving the material to be cut and to provide a flexible contact surface for the cutting edge of the cutting tool.

3,634,917

METHOD AND APPARATUS FOR MANUFACTURING RHINESTONE MESH

Morris Kortick, Cranston, R.I., assignor to Jewel Mfg. Co., Providence, R.I.

Filed May 21, 1970, Ser. No. 39,253
Int. Cl. B23p *5/00*
U.S. Cl. 29—10 **17 Claims**



The device of the present invention utilizes a basic scoop designed to hold a plurality of rhinestone settings with the prongs in vertical position ready to receive the stones. The scoop is provided with a rectangular bank of prepared openings into which the rhinestone settings will fall right side up automatically when the scoop is passed through a reservoir of settings. The scoop and rhinestones are now positioned on a base member having a vertically movable frame. A gauze mesh is now positioned across the top of the frame and vertically lowered so that the vertical prongs on the rhinestone settings will pass through the mesh at the corner intersections. A second scoop is now passed through the reservoir of rhinestones and picks up a bank of rhinestones equivalent to the number of settings on the previous scoop. These are held in the upper part of the machine by suction in accordance with the conventional type of rhinestone-setting machines. The machine then lowers the rhinestones into the prongs and clinches the prongs over the rhinestone in a conventional manner. The mesh is imprisoned between the prongs and the rhinestone effectively locking the rhinestone, the setting, and the mesh together.

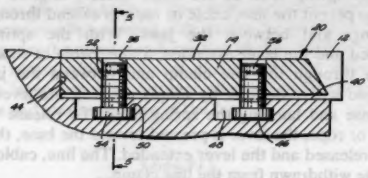
3,634,918

WEDGE LOCK FASTENER FOR CUTTING TOOLS

Oliver T. Waisanen, 1003 Hickory, Royal Oak, Mich.

Filed Oct. 10, 1969, Ser. No. 865,413
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **8 Claims**

Means for retaining and actuating a wedge-locking member in a cutting tool, to hold a throwaway cutting insert blade, and which includes a T-slot under the wedge for an inverted fastener that has threaded engagement with the wedges and allows self-alignment of the wedge as applied.

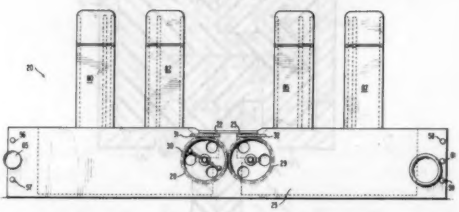


3,634,919

APPARATUS FOR ASSEMBLING LAMINATIONS

Berthold L. Nieder, 85 Manchester St., Concord, N.H.

Filed Nov. 7, 1969, Ser. No. 874,823
Int. Cl. H05k *13/00;* **B23p** *19/04*
U.S. Cl. 29—203 L **13 Claims**



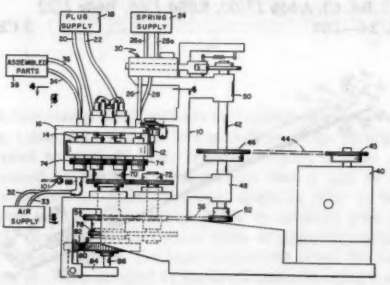
Apparatus for producing magnetic cores of predetermined dimensions by assembling laminations of selected size and configuration in a predetermined order wherein laminations to be assembled into cores are received and stored in lamination magazine means adaptable to various sizes of laminations and individual laminations are removed from the magazine means and moved into stacked relation by conveyor means preferably including a plurality of endless flexible members driven in coordinated movement for carrying lamination pushing members adjacent the lamination magazine means.

3,634,920

ASSEMBLY APPARATUS

Richard J. Maguire, Scituate, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 31, 1969, Ser. No. 872,839
Int. Cl. B23p *19/04;* **B23q** *7/10*
U.S. Cl. 29—208 F **11 Claims**



Apparatus for assembling component pairs comprising a nest structure for receiving first and second components in

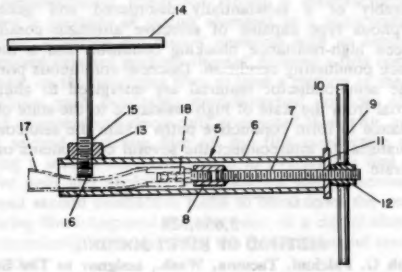
aligned relation, a rotary drive for the nest, a clamp structure for securing the first component in the nest to prevent rotation relative thereto comprising a pair of cooperating pincher elements which are pivotally mounted within a slot in the nest structure and which have finger portions to engage the component to be clamped and foot portions against which a member bears to cause rotation of the pincher elements and clamping of the first components, and an axial drive for causing movement of the second component against the first component. Also apparatus for the automatic high-rate assembly of such pairs of components which includes a turret having a plurality of such nest structures rotatably mounted thereupon, rotary drives for rotating the turret and for rotating the nests relative thereto, delivery systems for delivering first and second components in aligned relation sequentially to said nest structures, a system to remove the pair from said nest structure after assembly, a shuttle mounted adjacent the turret including the axial drive, and means for causing the shuttle to rotate such that the axial drive is aligned with a nest structure for a portion of each complete revolution of the turret and for actuating the axial drive when so aligned.

3,634,921

HOSE NIPPLE EXTRACTOR

Rosaire P. Gagnon, P.O. Box 515, Upper Frenchville, Maine

Filed Aug. 14, 1969, Ser. No. 850,024
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 **3 Claims**



This invention consists of a short piece of metal tubing in which is located a threaded rod that projects out one end of the metal tube through a washer to terminate in the hub of a handle that is at right-angle to the aforesaid rod. That end of the threaded rod that is in the metal tube is provided with a chuck adapted to securement to any nipple that one wishes to remove from a piece of ruptured hose having the nipple on one end thereof. A T-shaped handle, having a threaded stem, is screwed down through a hub that is suitably secured to the outside of the aforesaid metal tubing. The lower end of the aforesaid threaded stem is screwed down onto any piece of ruptured hose that is placed in the open end of this invention. The aforesaid stem firmly holds the hose while the threaded rod and its chuck pulls out the nipple from the end of the hose, as will be thoroughly understood by those experienced in the art when one examines FIG. 2 of the accompanying drawing.

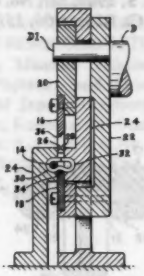
3,634,922

APPARATUS AND METHOD FOR FORMING COIL FOR PLASTIC SLIDE FASTENER

John Emerson Burbank, Middlebury, Conn.; William Henry Lautenberger, Staten Island, N.Y., and Patrick John Fasciano, Jersey City, N.J., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed Aug. 26, 1970, Ser. No. 67,066
Int. Cl. B21f *45/18*; B29d *5/00*
U.S. Cl. 29—410 **3 Claims**

In a zipper coil former employing a pair of comb members moving the coil along a mandrel, the idea is to indent the



sides of the coil by engaging them with a thickened portion of the spine of the combs.

3,634,923

METHOD OF RECLAIMING TUNGSTEN CARBIDE TOOL BITS

Charles Korpak, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1969, Ser. No. 852,489
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **2 Claims**

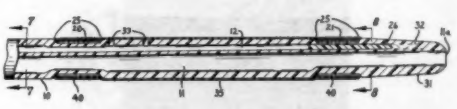
A method of separating a used tungsten carbide tool bit from a steel tool holder wherein the bit is bonded to the holder by means of a copper-silver alloy by dissolving out the alloy in an acid-water solution consisting preferably of about 47 volume percent nitric acid at room temperature.

3,634,924

METHOD OF MAKING MULTILUMEN BALLOON CATHETER

Lawrence W. Blake, Huntington Beach; Bruce D. Bett, Dana Point, and Clement E. Lieber, Yorba Linda, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 20, 1970, Ser. No. 29,889
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 **8 Claims**



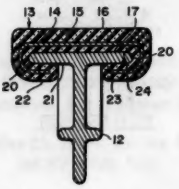
A multilumen tube is extruded from a thermoplastic material having a memory characteristic. An end portion of the tube is heated sufficiently to soften the plastic and permit the end portion to be drawn out to a reduced diameter. A pair of metal ferrules is placed on the reduced end portion in predetermined positions spaced a short distance apart. Then the reduced portion is heated in relaxed condition causing it to reexpand and lock the ferrules in place. Balloon inflation openings are formed communicating with one of the lumens. A sleeve of balloon material is secured by bindings over the ferrules. In one embodiment the tube is limp and the balloon is utilized as a sail to flow carry the catheter through a vein into and through the heart and into the pulmonary artery.

3,634,925

METHOD OF ASSEMBLYING PADDED ARMREST

William R. Van Loo, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed Dec. 5, 1969, Ser. No. 882,592
Int. Cl. B23p 3/00, 25/00
U.S. Cl. 29—458 2 Claims



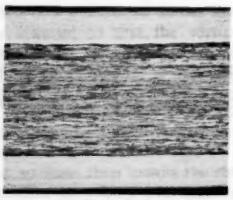
A resilient padded arm rest is formed on a chair arm by molding a bendable shape-retaining metal channel in the lower portion of a resilient plastic body with an integral plastic coating over the bottom of the channel and the side portions of the channel, the channel being placed over the arm and the side portions being bent inwardly to compress the plastic against the arm top and plastic on the side portions against the arm bottom for anchoring the cushion pad in place.

3,634,926

METHOD OF FORMING A COMPOSITE METAL BY ROLLING AND RECRYSTALLIZATION

Joseph Winter, New Haven, Conn., assignor to Olin Mathieson Chemical Corporation

Continuation of application Ser. No. 538,697, Mar. 30, 1966, now abandoned, Continuation-in-part of application Ser. No. 520,404, Jan. 13, 1966, now abandoned, Continuation-in-part of application Ser. No. 229,262, Oct. 2, 1962, now abandoned. This application May 19, 1969, Ser. No. 828,089
Int. Cl. B23k 31/02
U.S. Cl. 29—497.5 10 Claims



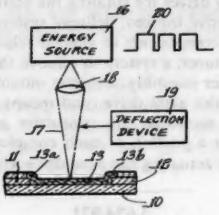
The disclosure teaches a process for obtaining composite metal articles and the article obtained thereby wherein a first metal component has a recrystallization temperature under 500° F. and a second metal component has a recrystallization temperature at least 100° F. higher than the first metal component, with the components being rolled together in direct, face-to-face contact at a speed of at least 20 feet per minute in one pass at a reduction between 40 and 90 percent, with the first component only being recrystallized, thereby forming an integrated composite article.

3,634,927

METHOD OF SELECTIVE WIRING OF INTEGRATED ELECTRONIC CIRCUITS AND THE ARTICLE FORMED THEREBY

Ronald G. Neale, Birmingham, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 29, 1968, Ser. No. 779,674
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—576 17 Claims



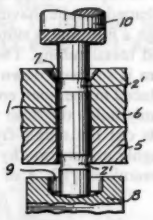
A method, and the article formed thereby, of selective wiring of integrated electronic circuits. A substrate is provided for receiving the plurality of electronic components. A layer of semiconductor material is applied over the substrate and electronic components, and the semiconductor material is preferably of a substantially disordered and generally amorphous type capable of selective alternate conditions between high-resistance blocking condition and a low-resistance conducting condition. Discrete continuous portions of the semiconductor material are energized to alter the material from the state of high resistance to the state of low resistance to form conductive paths within the semiconductor material to interconnect the several components on the substrate.

3,634,928

METHOD OF RIVET JOINING

Joseph G. Falcioni, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of application Ser. No. 417,661, Dec. 11, 1964, now Patent No. 3,405,594. This application Sept. 9, 1968, Ser. No. 758,220
Int. Cl. B21d 39/00; B23p 11/02
U.S. Cl. 29—509 3 Claims



The shank or preformed head of a rivet to be driven cold and having a shank which is cylindrical over the major portion of its length has a portion reduced in size adjacent to an end to be headed in driving, such as by being stepped or necked or the underside of a preformed head on such shank is grooved adjacent to such shank. The reduced portion is located at the end of a hole in which the rivet shank is inserted so that mushrooming of the rivet into engagement with the hole end is deterred and delayed to enable the portion of the rivet shank within the central portion of the hole to be shortened during setting of the rivet and to swell to press sub-

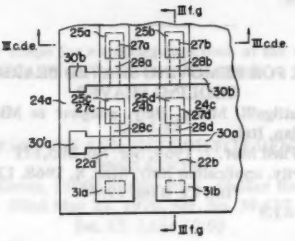
stantially uniformly against the hole wall throughout its length.

3,634,929

METHOD OF MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUITS

Kenji Yoshida, Yokohama-shi, and Osamu Ichikawa, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 29, 1969, Ser. No. 872,223
Claims priority, application Japan, Nov. 2, 1968, 43/79754
Int. Cl. B01j *17/00;* H01l *1/16*
U.S. Cl. 29—577 6 Claims



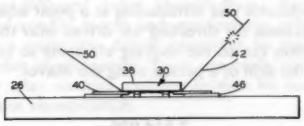
A semiconductor integrated circuit is manufactured by forming a plurality of circuit elements in a semiconductor substrate, covering the circuit elements with an insulating film except exposed portions thereof, forming a first conductive path on the insulating film, at least a portion of the first conductive path overlaying predetermined portions of the circuit elements and electrically connected therewith, applying a second insulating film on the first conductive path, forming a second conductive path to overlay the first conductive path and applying a breakdown voltage across the first and second conductive paths to breakdown the second insulating film interposed therebetween via a circuit element, thus electrically interconnecting the first and second conductive paths.

3,634,930

METHODS FOR BONDING LEADS AND TESTING BOND STRENGTH

Benjamin H. Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 12, 1969, Ser. No. 832,630
Int. Cl. B01j *17/00;* H01l *7/00*
U.S. Cl. 29—574 8 Claims



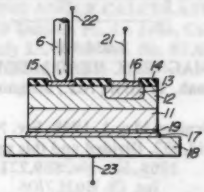
Bond strengths between bonded leads of electrical devices and conductive elements of circuit patterns are evaluated by preengaging a flexible member such as a wire or strip of metal with the electrical device prior to the making of the bond to be evaluated. The flexible member is engaged with the electrical device with a predetermined releasability so that, when the flexible member is pulled, the member releases from the device if the bonds are of satisfactory strength but the bonds rupture if they are of unsatisfactory strength and, in this instance, the flexible member remains intact. Particular utility resides in employing this system to evaluate bond strengths of leads of beam-lead integrated circuits or transistors when such devices are bonded to thin-film circuits.

3,634,931

METHOD FOR MANUFACTURING PRESSURE SENSITIVE SEMICONDUCTOR DEVICE

Gota Kano, Kyoto; Masami Yokozawa, Osaka; Tatsuo Kawasaki; Shohei Fujiwara, and Hiromasa Hasegawa, all of Takatsuki-shi, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma-shi, Osaka, Japan

Filed Dec. 9, 1969, Ser. No. 883,372
Claims priority, application Japan, Dec. 10, 1968, 43/92173
Int. Cl. B01j *17/00;* H01l *7/02*
U.S. Cl. 29—589 5 Claims



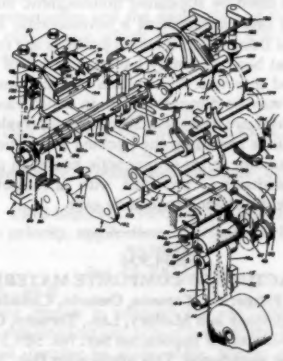
In a semiconductor device with a four-layer structure having the so-called thyristor characteristic, when the control electrode for controlling its breakover voltage is constructed by the Schottky barrier and a means to apply a stress to the barrier, the breakover voltage of the said semiconductor device can be controlled by the stress. If this device is assembled in a circuit system, the circuit system can be set to either the "off" or "on" state, corresponding to the applied stress.

3,634,932

METHOD FOR PRODUCING INSULATION IN THE SLOTS OF MAGNETIC CORES

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company

Original application July 17, 1967, Ser. No. 653,983, now Patent No. 3,514,836, dated June 2, 1970. Divided and this application July 30, 1969, Ser. No. 845,996
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 16 Claims



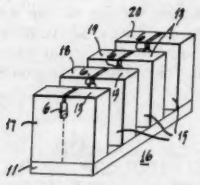
A method for producing electrical insulators, for example, slot liners from an elongated continuous strip of dielectric material in the slots of a magnetic core including feeding a predetermined quantity of the dielectric strip material from a

supply station to a strip accumulator. A first portion of the predetermined quantity is urged by the accumulator into engagement with a stop in a sizing and forming station where individual pieces of dielectric strip material having different preselected sizes are formed. Strip pieces having desired configurations are then produced by placing the pieces into engagement with preselected forming tools supported generally adjacent the sizing and forming station. The individual strip pieces are then transferred into predetermined slots of the magnetic core by inserting a given forming tool with a strip piece positioned thereon into a predetermined core slot. When the insulators are slot liners, they may have laterally extending portions and an intermediate axially extending bight portion at one end thereby permitting shorter coils to be used in the magnetic core while also allowing the coils to take a gradual bend adjacent the core, next to the bight portion, which tends to prevent damage to the coils.

3,634,933
MAGNETIC HEAD METHOD

Joseph John Hanak, Trenton, N.J., assignor to RCA Corporation

Original application May 1, 1968, Ser. No. 725,811, now Patent No. 3,544,982. Divided and this application Dec. 23, 1969, Ser. No. 889,771
Int. Cl. H01f 7/06
U.S. Cl. 29—603 **6 Claims**



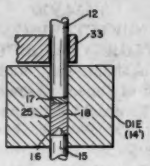
An integral multihead magnetic transducer and method of manufacturing the same which is for example suitable for use in contact or noncontact disc recording. The transducer is comprised of blocks of preferred magnetic material having desired grooved shape and surface smoothness which are united and gap-filled by stipulated nonmagnetic materials to form a loaf. In one embodiment a nonmagnetic base is affixed to the loaf from which selected portions are removed to form an integral head assembly having a series of recording heads at spaced intervals. For certain applications the nonmagnetic base may be dispensed with, in which case selected pieces of the loaf are removed at spaced intervals with the remaining portions providing the backing and structural support for the resultant series of magnetic heads. In either case a multiple transducer is provided with accurately located heads and perfectly aligned recording gaps.

3,634,934
MANUFACTURE OF COMPOSITE MATERIALS

William M. B. Fitzgerald, Toronto, Ontario, Canada, assignor to Johnson Matthey and Mallory, Ltd., Toronto, Canada

Continuation-in-part of application Ser. No. 507,173, Nov. 10, 1965, now abandoned. This application Dec. 26, 1968, Ser. No. 786,971
Int. Cl. H01r 9/00
U.S. Cl. 29—630 C **6 Claims**

A welded composite formed by cutting and heating continuous lengths of wire and immediately transferring the lengths to a die where the lengths are joined by pressing at high pressure and the joined lengths are then forced at least a

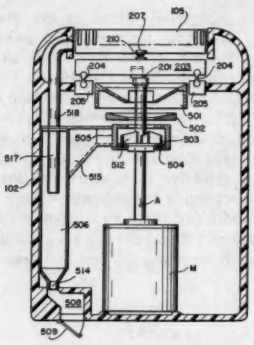


portion of the way out of the die where heading operations are performed.

3,634,935
DEVICE FOR REMOVING SHAVED BEARD AND COOLING SHAVER

Giancarlo Battigalli, Milan, Italy, assignor to Mistrelettrica S.R.L., Milan, Italy

Filed Mar. 7, 1969, Ser. No. 805,171
Claims priority, application Italy, Mar. 8, 1968, 13697 A/68
Int. Cl. B26b 19/44
U.S. Cl. 30—41.5 **16 Claims**



A suction device for collecting and removing shaved beard and for cooling the shaving elements of an electric shaver, comprising in combination a trough for cut hair under the shaving elements, a hair suction fan, a diffuser, a centrifugal separator for said cut hair, a hair collecting chamber provided with a discharge door, and an ejection duct extending from the separator and terminating at a point adjacent to the shaving elements for directing air driven into the separator by the suction fan to the shaving elements to cool the elements and the skin of a person using the shaver.

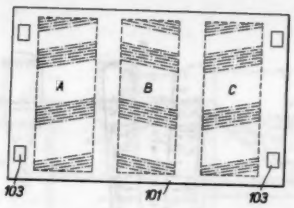
3,634,936
SHAVING UNIT FOR ELECTRIC SHAVER

Giancarlo Battigalli, Milan, Italy, assignor to Mistrelettrica S. R. L., Milan, Italy

Filed Mar. 7, 1969, Ser. No. 805,170
Claims priority, application Italy, Mar. 8, 1968, 13693
Int. Cl. B26b 19/02
U.S. Cl. 30—43.92 **16 Claims**

A shaving unit for electric shaver comprising a comb provided with a plurality of perforations of rectangular shape, said perforations being spaced from one another and being arranged along sloping parallel rows forming an angle of about 10° with the longitudinal axis of the comb, the perforations of two adjacent rows being staggered between each

other, and the comb having the form of a continuous curve consisting of three waves, and three shaving elements of



semitubular shape for engaging the comb at the waves to cut hair received in the perforations of the comb.

3,634,937

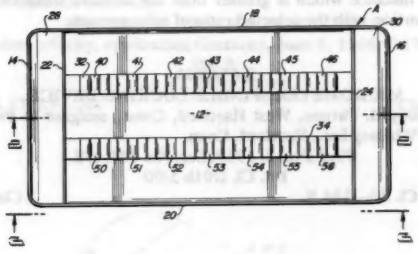
APPARATUS AND METHOD FOR DENTAL OPERATIONS

Edward J. Green, 11900 Shaker Blvd., Shaker Heights, Ohio

Filed May 22, 1970, Ser. No. 39,632

Int. Cl. A61c *19/00*

U.S. Cl. 32—1 **13 Claims**



An apparatus and method for performing dental operations includes provided, kit defined by a sterilizable metal tool tray, an accessory tray for holding accessories to be used in performing a predetermined dental operation and a set of tools for use in performing the predetermined dental operation. Each tool in the set and each tray is provided with a common color identification symbol. A plurality of such kits may be provided with each kit containing tools and accessories for performing a different dental operation. Each kit then has a different color identification. An untrained assistant can readily locate and position the proper kit for performing a particular dental operation by means of the common color identification. Tools are easily returned to a proper tray after washing and sterilization by means of the common color identification.

3,634,938

DENTAL HANDPIECE

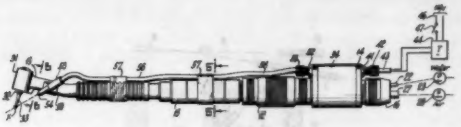
Seymour M. Hutchinson, 7 Jody Lane, Plainview, N.Y., assignor to Seymour M. Hutchinson, Plainview; Adrian N. Spitz, Massapequa and I. Jordan Kunin, New York, N.Y., part interest to each

Filed Aug. 19, 1970, Ser. No. 65,031

Int. Cl. A61c *19/02*

U.S. Cl. 32—27 **17 Claims**

A dental handpiece having an air turbine drive for the drill bit and a water jet stream for cooling the operating area, including fiber optics means for directing light upon the dental work area, and including a light source for the fiber optics incorporated into the dental handpiece. The air and water



systems are utilized to absorb heat generated in the handpiece by the light source.

3,634,939

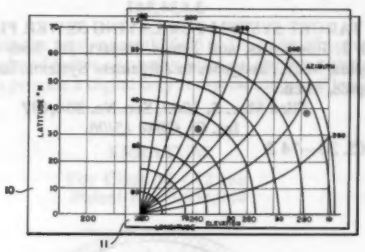
SIGHTING ANGLE CALCULATOR

Herman Sorem, 5749 Dolphin Pl., La Jolla, Calif.

Filed July 23, 1970, Ser. No. 57,609

Int. Cl. G01c *21/00*

U.S. Cl. 33—1 SC **9 Claims**



The spatial disposition of an object in orbit at a known height above the earth's surface is determined in terms of elevational and azimuthal angles relative to a known position on the earth'surface. A scalar representation of longitudinal versus latitudinal positions on the earth's surface relative to a great circle above which said object will be located is employed together with an overlay of a transparent graphical representation defining a plurality of first continuously linear loci each of the first loci representing the positions relative to said scalar representation and the disposition of said object above the great circle from which the object will have the same elevational angle. A plurality of second continuously linear loci is included on the transparent representation each of the second loci representing the position relative to the scalar representation and the disposition of the object above the great circle from which the object will have the same azimuthal angle.

3,634,940

SIGHTING DEVICE, IN PARTICULAR A SIGHTING TELESCOPE

Karl Vockenhuber, Potzleinsdorferstrasse 118, Vienna 18, Austria

Filed Sept. 18, 1969, Ser. No. 859,086

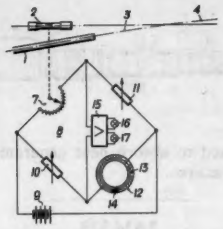
Claims priority, application Austria, Sept. 25, 1968, A 9370/68

Int. Cl. F41g *3/08*

U.S. Cl. 33—49 B **25 Claims**

A sighting device is adapted for use with firearms and defining a sighting line, an axis of bore of the firearm and the sighting line forming an acute angle. Means adapted to vary said angle, electric means responsive to the value of the angle and defining a variable output in dependence on the value of said angle are provided. Electric control means define a second variable output in dependence on at least one value causing deviations of the point of impact from the target.

Computing means receive the two outputs and generate electric output signals upon divergences between the actual value



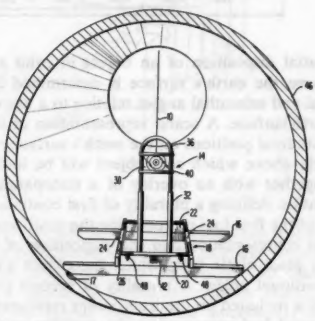
of the angle and the nominal value of the angle with respect to the at least one value causing a deviation and control means receiving said signals.

3,634,941

TARGET SYSTEM FOR LAYING SEWER PIPES

Roger J. Roodvoets, and James Stapert, Jr., both of Grand Rapids, Mich., assignors to Alignment Systems, Inc., Grand Rapids, Mich.

Filed Mar. 5, 1969, Ser. No. 804,487
Int. Cl. G01c *15/06*
U.S. Cl. 33—74 D **3 Claims**



This disclosure relates to an adjustable target for use in aligning pipes with a laser beam or other similar collimated light beam which is projected axially with the pipe. The target has a base member, a level carried by the base member, an upright target carried by and vertically adjusted relative to the base. Extension means for the base member are also disclosed for extending the base laterally to permit the target to be employed in larger pipes.

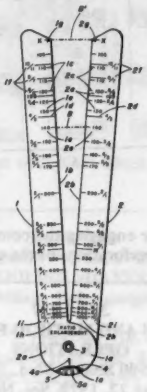
3,634,942

PROPORTION SCALER

Raymond Nicyper, Birch Hill, Weston, Conn.

Filed Mar. 20, 1969, Ser. No. 809,490
Int. Cl. B43l *9/08*
U.S. Cl. 33—150 **11 Claims**

Two pivotally connected arms of a proportion scaler have on opposite sides reduction scales and enlargement scales with graduations and indicia representing a series of ratios of enlargement decreasing toward the outer ends of the arms and including outermost graduations representing the ratio 1:1, and a series of ratios of reduction including an outermost graduation also representing the ratio 1:1. In order to enlarge, for example, a selected distance at a selected ratio, the



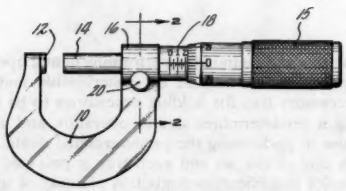
graduations whose indicia indicate the selected ratio, are spaced a selected distance by turning the arms relative to each other, and the outermost graduations are then separated by a distance which is greater than the selected distance in proportion with the selected ratio of enlargement.

3,634,943

MICROMETER SPINDLE LOCKING DEVICE

Anthony D. Parone, West Hartford, Conn., assignor to Pratt & Whitney Inc., Hartford, Conn.

Filed Dec. 2, 1969, Ser. No. 881,478
Int. Cl. G01b *5/00*
U.S. Cl. 33—164 R **1 Claim**



The spindle of a micrometer caliper is locked in place relative to the micrometer frame by a simple, linear motion operated locking slide. The slide has a cam surface which directly engages the spindle, thus restraining it from both linear and rotative motion.

3,634,944

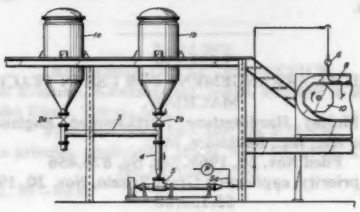
DRYING OF STICKY THERMOSENSITIVE HYDROUS GELS

Meyer Louis Zonis, Livingston; Girish Chandulal Shah, Wayne, both of N.J.; Kenneth Worden Saunders, Darien, and Michael Niall Desmond O'Connor, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 1, 1970, Ser. No. 41,807
Int. Cl. F26b *7/00*
U.S. Cl. 34—12 **12 Claims**

A sticky water-soluble high-viscosity polyacrylamide hydrous gel is dried without significant decrease to its water-

solubility by extruding the gel as paralleled cords upon a fast-travelling belt having a nonadherent surface and heating the cords with high-temperature gas until the surface of the cords



is nontacky, and then discharging the cords upon a slowly travelling belt and completing the drying with low-temperature gas.

3,634,945

AIRCRAFT ARTIFICIAL HORIZON

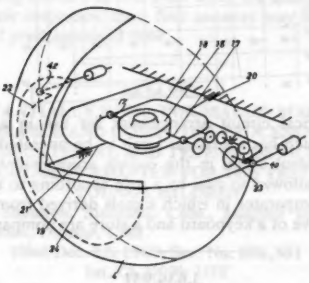
Werner Hantusch, Uberlingen (Bodensee), and Bernhard Strittmatter, Nussdorf (Bodensee), both of Germany, assignors to Fluggeratewerk Bodensee GmbH, Uberlingen (Bodensee), Germany

Filed May 20, 1969, Ser. No. 826,213

Claims priority, application Germany, June 8, 1968, P 17 73 590.9

Int. Cl. G01c *19/44*

U.S. Cl. 33—204 **3 Claims**



An artificial horizon instrument for an aircraft is described which indicates horizon movements as they would naturally appear to the pilot. The instrument includes a particular support arrangement for the roll ring and pitch ring that permits movements through relatively large angles.

3,634,946

DIGITAL COMPASS

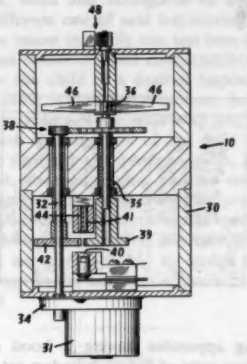
Joseph Star, Roslyn Heights, N.Y., assignor to Lundy Electronics & Systems, Inc., Glen Head, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,843

Int. Cl. G01c *17/30, 17/38*

U.S. Cl. 33—224 **17 Claims**

A digital compass system is provided by continuously and repetitively scanning a magnetic field with a field direction-sensing device, producing a first signal when the device is aligned in a reference direction, and producing a second signal when the sensing device is aligned in a predetermined



manner with the total magnetic field at the point of exposure. Spatially related pulses occurring between the two signals are counted to provide a digital output representative of heading.

ERRATUM

For Class 34—12 see:
Patent No. 3,634,944

3,634,947

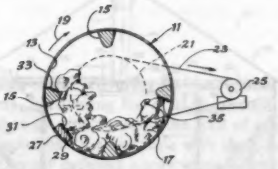
COATING APPARATUS

Henry P. Furgal, Bernardsville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,314

Int. Cl. E01b *29/04*

U.S. Cl. 34—60 **5 Claims**



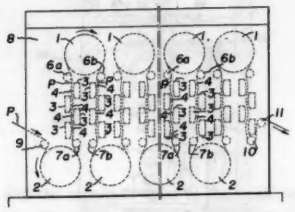
An apparatus for conditioning fibrous materials includes a rotatable drum in which the fibrous material may be tumbled, as in an automatic laundry dryer, and held, to the interior wall of the drum, so as to be in form-retaining relationship therewith, a base which has on an exterior surface thereof a conditioning agent for the fibrous materials. On contact with the tumbling fibrous materials, the conditioning agent is removed from the base and is deposited on the materials in sufficient quantity to condition them. Usually, the conditioning agent is a fabric softener and/or antistatic agent of the synthetic organic surface active type, the base is a thin flexible sheet or strip of material, such as paper or suitable plastic, the conditioning takes place in an automatic laundry dryer and the base is held to the dryer interior wall by an adhesive, such as a pressure sensitive adhesive.

3,634,948

DRYING APPARATUS FOR PAPERMAKING

Tadashi Kobayashi, 1560-2 Higashihara, Tenma, Fuji-shi, Shizuoka-ken, Japan

Filed Aug. 20, 1970, Ser. No. 65,538
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **3 Claims**



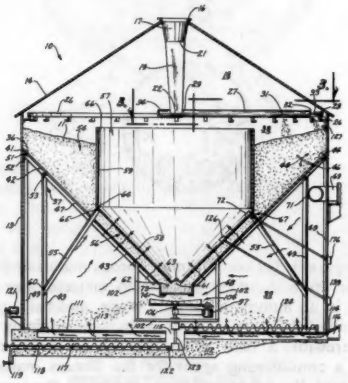
A web-drying apparatus having a hood enclosing two parallel transverse rows of drying cylinders set one above the other at a considerable distance from each other, each web run between the upper and lower rows of drying cylinders being lined on either side with a vertical row of jet boxes each of which has a convex profile along the side facing the web and which alternate in position with the jet boxes in the opposite row, so that the web will be dried on the drying cylinders and also as it runs in a wavy path from one row of drying cylinders to the next, while the web is exposed to a hot blast from the convex side of each jet box on both sides of the web, but without touching the jet boxes.

3,634,949

CONTINUOUS-FLOW DRYER FOR GRANULAR MATERIAL

Robert A. Louks, Gilman, Iowa

Filed Dec. 31, 1969, Ser. No. 889,417
Int. Cl. F26b *17/14*
U.S. Cl. 34—174 **12 Claims**



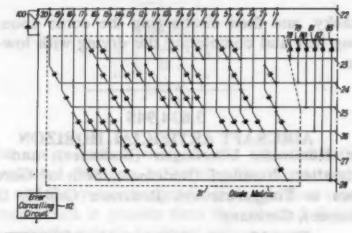
This invention relates to a continuous-flow dryer apparatus for granular material for use within a conventional circular storage bin having a floor and a material-evacuating unit: the apparatus having a reservoir for receiving moist granular material, the reservoir disposed above the bin floor and about the periphery of the bin and fluidly communicating with a drying column having perforated walls, the reservoir funnelling the material through the column toward the axis of the bin; having further a heater-blower device for supplying heated air fro percolation through the perforated walls of the column and material therein for absorbing moisture therefrom; and having also a discharge unit connecting the column for removing the dried material from the column and spreading the material upon the bin floor for evacuation therefrom.

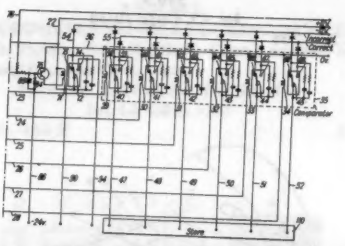
3,634,950

ELECTRICAL ARRANGEMENT FOR USE IN TEACHING MACHINE

Ian Guy McKay, Hardingstone, Northampton, England, assignor to Kee, Inc., Baltimore, Md.

Filed Nov. 20, 1969, Ser. No. 878,456
Claims priority, application Great Britain, Nov. 20, 1968, 55,159/68
Int. Cl. G09b *7/00*
U.S. Cl. 35—5 **7 Claims**





An electrical circuit arrangement for use in a teaching machine which has a keyboard unit to be operated by a student. A control signal in the circuit arrangement is either blocked or allowed to pass by a gate according to the condition of a comparator in which signals derived from switches representative of a keyboard and a store are compared.

3,634,951

MOLDED RELIEF SHEETS

Ernst Knoll, 7 Winterbergstrasse, 4973 Vlotno (Weser), Germany

Original application Mar. 3, 1967, Ser. No. 620,378, now Patent No. 3,458,614. Divided and this application July 28, 1969, Ser. No. 860,459
Int. Cl. G09b *29/12*
U.S. Cl. 35—41 **3 Claims**

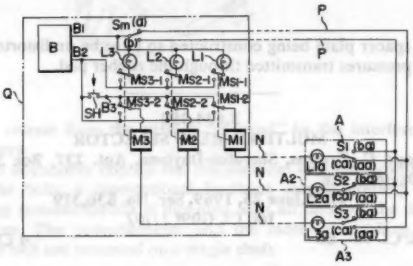
A relief sheet segment simulating an original relief structure having a visible pattern thereon, the relief sheet segment having been obtained by printing a plastic sheet with an

image and thereafter relief molding the sheet, the printed image having been derived from a planar pattern member obtained by flattening a relief pattern member to obtain a primary master pattern, and the printed image on the relief sheet segment having been normalized to conform closely to the visible pattern on the original relief structure by correcting for distortion introduced by flattening said relief pattern member.

3,634,952
RESPONSE-DETECTING DEVICE

Masami Koizumi, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 10, 1969, Ser. No. 875,336
Claims priority, application Japan, Nov. 13, 1968, 43/83075
Int. Cl. G09b *7/02*
U.S. Cl. 35—48 B **8 Claims**

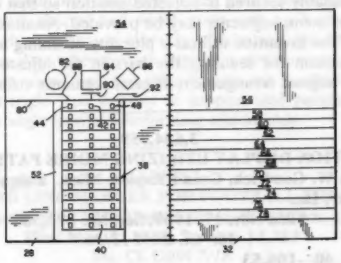


A device for detecting the responses of the questionees given by means of their selection switches through the lamp indication, other indicating and recording means, or other indicating-recording means which is so arranged as to be actuated for a predetermined time by the means of "shorting type" switches (in which the moving contacts in contact with the fixed contacts are not immediately opened in response to the switching action), so that even when the questionees may change their responses, their first answers may be indicated during said predetermined time.

3,634,953
SUBSTANTIALLY NONCONSUMABLE, MACHINE-SCORABLE AND COMPUTER-PROCESSABLE EDUCATIONAL AND TESTING DEVICES PARTICULARLY ADAPTED FOR THE TESTING OF YOUNG CHILDREN

James L. Shannon, Stockton, Calif., assignor to Edcodyne Corporation, Orange, Calif.

Filed Dec. 18, 1969, Ser. No. 886,301
Int. Cl. G09b *1/18*
U.S. Cl. 35—48 A **18 Claims**

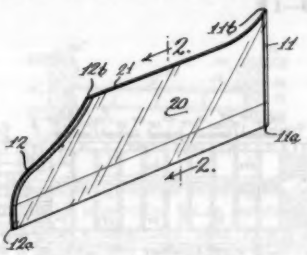


New and improved, substantially nonconsumable, machine-scorable and computer-processable educational and testing devices for the testing of young children are provided and include a test booklet and mark sense test-scoring card having a plurality of response columns for use therewith through the mounting of said card in said booklets. A multiple-choice test in the form of a plurality of test item pages is provided in said test booklet, and said test pages are respectively arranged, sized and configured to automatically register with a different one of said test-scoring card response columns, and to insure that only one test item is visible at any one time to thus minimize child distractability and facilitate the marking by the child of a desired response area in the relevant test-scoring card response column. Indicia in the nature of the color coding of the respective test item pages are provided to focus the attention of the child taking the test thereon, and to facilitate test administration. At the completion of the test, the test-scoring card is removed for appropriate machine scoring and computer processing of the test results, while the test booklet remains ready for repeated reuse through the simple mounting of a new test-scoring card therein. Means are also included to enable the ready and convenient change in the contents of some or all of the test items as desired.

3,634,954
WEARABLE DISPOSABLE COVERING OF HEAT SHRINK FILM

Jack H. Larsen; Louis J. Trier, both of Muskegon, and Anton W. Rytina, Grand Haven, all of Mich., assignors to Brunswick Corporation

Filed Dec. 3, 1969, Ser. No. 881,769
Int. Cl. A43b *1/10, 13/22*
U.S. Cl. 36—7.3 **11 Claims**



A wearable disposable covering of heat shrink film and, more particularly, a covering for a hand or foot. It can be placed over a shoe or directly onto the foot of a wearer and is usable as a disposable bowling shoe with the covering having a first part thereof defining a sole when placed on a foot and a second part thereof shaped to fit over the top of the foot and around the heel and the covering being of a size to loosely fit onto the foot and then be tightly drawn onto the foot by application of heat to the covering.

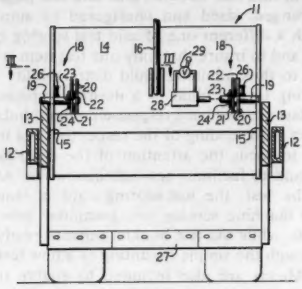
3,634,955
SAFETY LOCK FOR SCRAPER APRON

Walker H. Flint, Peoria, and Charles J. Chappell, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 19, 1969, Ser. No. 859,378
Int. Cl. E02f *9/24*
U.S. Cl. 37—126 **9 Claims**

A safety lock is mounted on the apron of a wheel tractor or tractor drawn scraper for selectively holding the apron in a raised position. The safety lock comprises a pin member slidably mounted on the apron and normally retained in a

retracted position during scraper operation. The apron may be raised and the member extended over a sidewall of the



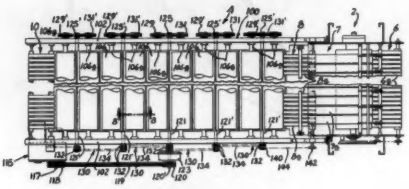
scraper bowl to positively maintain the apron in such raised position.

3,634,956

LAUNDRY, DRYING AND IRONING METHOD

Sheldon P. Behn, Highland Park, Ill., assignor to Super Laundry Machinery Company, Inc., Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 27,855
Int. Cl. D06f *61/00, 63/00, 65/00, 69/00*
U.S. Cl. 38—1 R 2 Claims



A drum-type ironer unit normally operative to iron laundry at a given speed of movement of the laundry therethrough is combined most advantageously with a chest-type ironer unit normally operative to iron laundry at a much higher speed. The two ironer units are mounted in tandem so the laundry discharged by the drum-type ironer unit is automatically fed to the inlet of the chest-type ironer unit. Both ironer units are operated at the much higher linear speed for which the chest-type ironer unit is designed to operate. The laundry normally fed to the drum-type ironer unit in a dried condition is fed thereto in an undried condition.

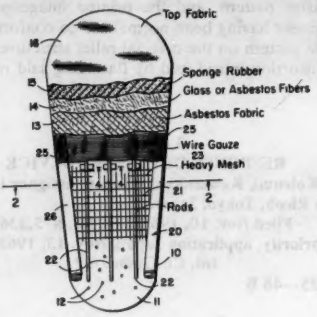
3,634,957

METAL SPACE PLATE ESPECIALLY FOR DRYCLEANING PRESSES

Harold O. Zeidler, 10 Brevoort Lane, Rye, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,519
Int. Cl. D06f *71/36*
U.S. Cl. 38—66 6 Claims

In order to prevent deterioration of the rubber pads of the steam presses of the type which are especially useful in the drycleaning industry, a porous spacer plate is provided for insertion between the block of the press and the rubber pad,



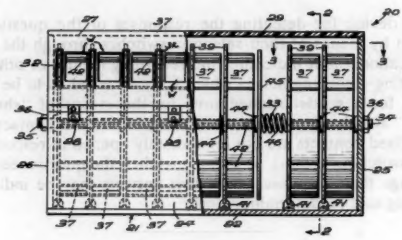
the spacer plate being constructed so as to be undistorted by the pressures transmitted through the rubber pad.

3,634,958

MULTIPLE MENU SELECTOR

Ronald G. Drowns, Sheraton-Daytona, Apt. 237, Box 3235, Daytona, Fla.

Filed June 25, 1969, Ser. No. 836,319
Int. Cl. G09f *11/02*
U.S. Cl. 40—68 4 Claims



An apparatus for displaying menu indicia cards, containing segments of a meal, in aligned relation so that the relationship of courses and prices may be easily determined. A plurality of drums are mounted for rotation on a single shaft with each of the drums being releasably restrained in adjusted position. The drums may be moved axially on the shaft to permit the changing of menu indicia bearing cards secured to the surface of the drums. A modified form of the invention utilizes a plurality of superposed discs arranged so that an element on one disc maintains the indicia-bearing cards in their holders on the face of the superposed disc. The discs are releasably secured in adjusted position so that an aligned group of menu segments may be provided. Another modified form of the invention utilizes a plurality of sliding bars having a mechanism for securing the bars in an adjusted position with an aligned arrangement of meal segments visible.

3,634,959

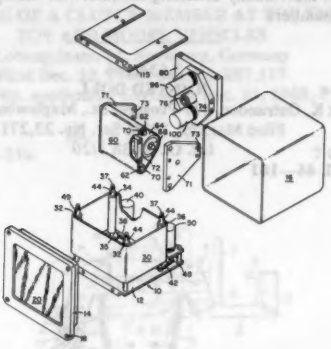
MOTION DISPLAY UTILIZING MOIRE PATTERNS

Gordon W. Goodrich, Grand Rapids, Mich., assignor to Lear Siegler, Inc.

Filed Nov. 17, 1969, Ser. No. 877,385
Int. Cl. G09f *13/36*
U.S. Cl. 40—106.53 11 Claims

A motion indicator utilizing light interference patterns developed by two overlapping, movable transparent endless belts each having a pattern thereon. One belt is entirely

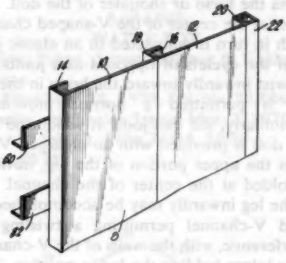
mounted within the other for angular as well as translational movement with respect to the other belt, a driven rotation plate mounting the inner belt. The angular rotation of the two belts alters the size and spacing of the resulting interference moire squares, creating the illusion of an approach to



or a retreat from the surface "marked" by the interference squares.

To accurately control the translational angular movement of the belts, a conventional feedback system utilizing followup potentiometers is included with all three of the drive motors. The potentiometer and the motor controlling the inner belt are mounted on a single shaft.

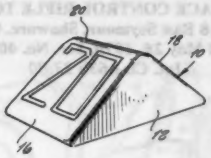
3,634,960
ADVERTISING SIGN
Tex Don Carlos, 518 S. Willow, Nowata, Okla.
Filed Mar. 20, 1970, Ser. No. 21,291
Int. Cl. G09f *7/00*
U.S. Cl. 40—125 K **7 Claims**



An advertising sign comprising a plurality of substantially identical interlocking panels hooked on a plurality of horizontal angle iron supports. Each panel has a U-shaped end and an L-shaped end which mate with each other. One end of each panel has a plurality of tabs and the other end thereof has slots whereby one edge of a slot rests on a tab of an adjacent panel and the tabs in turn are hooked on the horizontal angle iron thereby to support said panels on the horizontal angle iron in interlocking relationship.

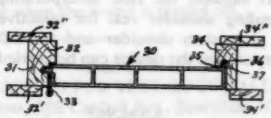
3,634,961
YARD LINE MARKER FOR FOOTBALL FIELD
George Nawalaniec, 1733 Walnut Drive, Woodstock, Ill.
Filed Mar. 2, 1970, Ser. No. 15,359
Int. Cl. G09f *7/18*
U.S. Cl. 40—125 J **3 Claims**

A yard line marker for placement on the ground surface at the yard lines of a football field, the marker being formed of deformable rubber in the shape of a unitary triangular block having an open rectangular bottom, parallel triangular sidewalls and oppositely inclined end walls; all the walls being of substantially the same thickness and integrally joined together to provide a hollow triangular block that is deformable on impact. Provided on each end face of the hollow triangular block are like numbers formed on the end



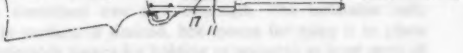
faces of the block in any desired manner, each number being clearly visible in the direction in which it faces when the marker is positioned on the yard line it is to designate. As designed the marker is symmetrical both along its medial vertical longitudinal and transverse planes and may also include an anchoring unit to which it may be readily attached and separated.

3,634,962
INTEGRAL INTERLOCKING WEATHER STRIPPING FOR DOORS, DOORJAMBS AND THRESHOLDS
Martin E. Peterson, Adams Road, F.R.D., Haydenville, Mass.
Filed July 3, 1969, Ser. No. 838,898
Int. Cl. E06b *7/16*
U.S. Cl. 49—383 **1 Claim**



An integral interlocking weather stripping for doors, doorjambs and thresholds is provided for an assembly which can be made and fitted at a factory and ready for complete installation within a building wall without need of later effecting weather stripping. There is no frictional engagement of the integral weather stripping flanges within the assemblage to cause wear or dislocation of the weather stripping. The weather stripping has outwardly projecting flanges of less thickness than the width of grooves in cooperating frame members which receive them. For weather stripping a threshold, a reversible extruded member with two weather-stripping flanges is mounted in a large groove at the bottom of the door to provide a further weather-stripping flange when one flange has become worn.

3,634,963
FIREARM LOCK
Robert Hermann, P.O. Box 114, Stronghurst, Ill.
Filed Nov. 4, 1970, Ser. No. 86,909
Int. Cl. E05b *73/00;* **F41c** *11/02*
U.S. Cl. 42—1 N **2 Claims**

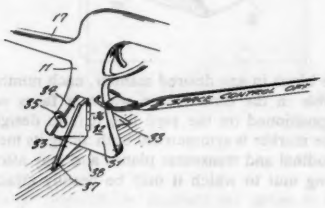


A locking mechanism for placement into the ejection port of a gun. The device when placed into the port of the gun is

key-operated to prevent the removal of the device and will not allow the gun to be fired until it is removed therefrom.

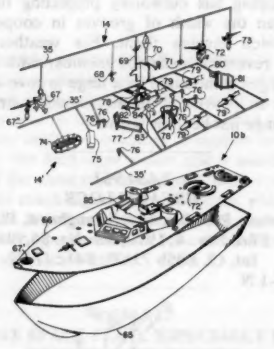
The device is also of such structure so that it cannot be forced out of the port. The core of the mechanism is also removable by the owner in order to provide quick key changes.

3,634,964
SPACE CONTROL RIFLE TOY
Geary L. Nail, 518 East Seymour, Shawnee, Okla.
Filed May 26, 1970, Ser. No. 40,547
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 E **1 Claim**



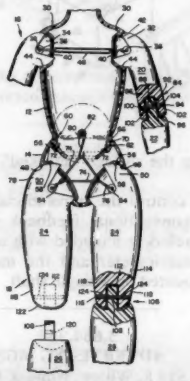
A toy rifle that is designed so to appeal to youngsters who are fascinated by the space age, the device comprising a gun including a barrel with a telescopic slight mounted thereupon, the rear end of the barrel being integral with a downwardly extending stock having a base incorporated at the lower end thereof so that the rifle may be supported on a level support surface, the rifle incorporating also a rearwardly extending shoulder rest for selectively positioning against the youngsters shoulder and the rifle including a shoulder strap so that the device can be carried conveniently.

3,634,965
ARTICLE ASSEMBLY EMPLOYING INTEGRATED, PREORIENTED DETAIL-DEFINING MEMBERS
Edward G. McAuley, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed July 1, 1970, Ser. No. 51,433
Int. Cl. A63h *23/02*
U.S. Cl. 46—93 **6 Claims**



Articles to be assembled such as plastic model toys which have a plurality of detail-defining members adapted to be secured in predetermined locations and attitudes to a structure-defining body are disclosed wherein assembly is simplified by integrally molding the detail-defining members on a runner in locations and attitudes matching the intermember spatial relationships of members of an assembled article. Thus, a plurality of preoriented detail-defining members can be simultaneously assembled to a structure-defining body without individually orienting or otherwise manipulating discrete members.

3,634,966
JOINTED DOLL
Robert K. Ostrander, 497 Prospect St., Maplewood, N.J.
Filed Mar. 27, 1970, Ser. No. 23,271
Int. Cl. A63h *3/20*
U.S. Cl. 46—161 **26 Claims**



The invention resides in a jointed doll which employs an enlarged V-shaped aperture at the ball socket of the upper arm as it joins the torso or shoulder of the doll. A one-piece molded eyelet at the center of the V-shaped channel engages a hook which in turn is connected to an elastic joiner which runs between the eyelets of opposed arm joints. The arm is adapted to twist inwardly toward the body in the socket, and additionally is permitted a normal movement in all directions. Similarly, the ball joint at which the leg joins the torso of the doll is provided with an enlarged V-channel arrangement at the upper portion of the leg, having an eyelet integrally molded at the center of the channel. Here again, twisting of the leg inwardly may be accomplished because of the enlarged V-channel permitting a twisting of the leg without interference, with the walls of the V-channel opening or the elastic joiner holding the leg in position. The forearm of the doll is joined to the upper arm by an upwardly extending protrusion having a hole therethrough. The upwardly extending protrusion is adapted to fit into a mating slot arrangement in the upper arm and a pin is insertable through the walls of the slot and through the hole in the protrusion. The pin provides an axis around which the forearm is pivoted. The elastic joiners which hold the arms and legs in position on the doll are directed radially from the eyelets in the V-aperture of the arms and legs which permits the movement of a limb to a position in which it will remain until changed by an outside force. The knee joint of the doll employs a pivot pin as the elbow joint which extends through an upwardly directed member and the sidewalls of the joint, on the upper leg portion. The hand and wrist joint takes the form of a segmentized ball, connected at the wrist of the forearm, which is adapted to engage a spherical hole in the back of the hand. The segmentized ball is a semispherical member having flat surface at its rear portion. The spherical hole in the upper portion of the hand is also provided with a

flat abutment surface at the inner portion of the entrance which provides mating surfaces to prevent the removal of the hand from the wrist joint, but allows movement of hand in all directions.

3,634,967

MOUNTING OF A CLUTCH MEMBER AT THE END OF TOY AND MODEL VEHICLES

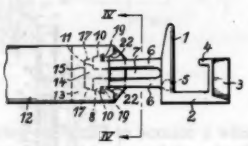
Max Ernst, Lohengrinstr. 14, Nurnberg, Germany

Filed Dec. 22, 1969, Ser. No. 887,117

Claims priority, application Germany, Dec. 21, 1968, P 18 16 388.7

Int. Cl. A63h *19/00*

U.S. Cl. 46—216 **7 Claims**



A coupling arrangement for toy or model railroad cars in which one coupling part comprises a pair of resilient legs with projections on the outer sides thereof, while the second coupling part has an aperture to receive the ends of said legs and a chamber with which the aperture communicates. The second coupling part has inclined surfaces leading to the aperture at the sides and top and a flat wall at the bottom of the aperture whereby the first coupling part can tilt laterally or upwardly on said second coupling part but is inhibited from tilting downwardly. The sidewalls of said chamber and the outer surfaces of said projections on the legs converge in a direction toward the side of the chamber disposed opposite the aperture.

3,634,968

WATER TOY

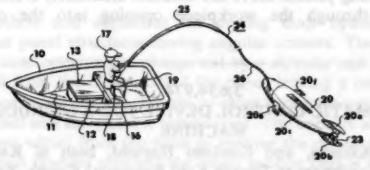
Hidehiko Muto, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed Sept. 28, 1970, Ser. No. 75,806

Claims priority, application Japan, Mar. 2, 1970, 45/20299

Int. Cl. A63h *33/26, 23/00*

U.S. Cl. 46—243 MV **10 Claims**



A water toy including a fish model attached to a boat model by means of an electrical cord having the configuration of a fishing pole and a fishing line. The boat model includes a battery and switch for transmitting electrical energy through the fishing pole and line to a motor disposed within the fish model for rotating a propeller arranged near the tail fine of the fish model. The motion imparted to the fish model by the rotating propeller flexes the fishing rod and line so that it appears that the fish is struggling to get off the fishing line, and at the same time the motion is transmitted to the boat for propelling the boat through the water.

3,634,969

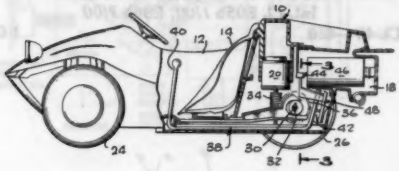
DUNE BUGGY TOY

Donald C. Harlting, Garden Grove; Berne E. Danielsen, Pacific Palisades, and Eilfred Nagus, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 19, 1971, Ser. No. 125,998

Int. Cl. A63h *29/22*

U.S. Cl. 45—243 LV **8 Claims**



A toy vehicle resembling a dune buggy and designed to give the appearance of movement over rough terrain when the vehicle is either motor driven or free wheeled along the ground. The vehicle has an open passenger compartment containing a pair of seat that can receive dolls, a mechanism coupled to the rear axle that simultaneously pivots both seats from one side to the other as the vehicle rolls along the ground so that the vehicle appears to be tilting from side to side in the opposite direction. A gearshift lever in the passenger compartment can be operated to slide a switch member. When the switch member is slid to one side, it turns off an electric motor and also slides a worm gear out of engagement with a screw on the motor shaft, so that the vehicle is free wheeling when the motor is turned off.

3,634,970

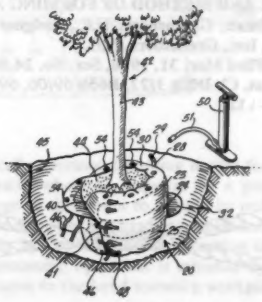
WRAPPING FOR TREE ROOT BALLS

Nicholas Williams, 508 Central Ave., Scarsdale, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,472

Int. Cl. A01g *23/04*

U.S. Cl. 47—37 **15 Claims**



A wrapping for the earth ball of a tree to be moved consists of a circumferential belt inflated against the ball for tight compressive engagement, to prevent loosening of the earth or the contained tree root structure. The inflatable belt, made in sections if desired, has means for tying it in place and preferably means for holding or encasing at least parts of the upper and lower ball surfaces. A supplemental, inflated collar, secured to the main, wrapped belt, aids in maintaining the integrity of the trunk and roots with the ball.

ERRATUM

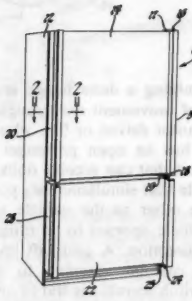
For Class 49—383 see:
Patent No. 3,634,962

3,634,971

ALL PLASTIC REFRIGERATOR DOOR WITH INTEGRAL BUMP STOP HANDLE

Keith K. Kesling, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1969, Ser. No. 881,074
Int. Cl. E05b *1/00*; E06b *3/00*
U.S. Cl. 49—460 **1 Claim**



In preferred form, an all plastic refrigerator door including an outer panel and an inside panel having the sides thereof interconnected with one another to form side corners on the door. Rigid foamed-in-place insulation material fills a space between the outside and inner panels and reinforces a front planar extent of the door and the corners thereof against deflection. An integrally formed flange on the front panel extends outwardly and forwardly thereof to define a resiliently yieldable flaplike bumper for absorbing shock.

3,634,972

SPLICE AND METHOD OF FORMING A SPLICE

Walter F. Illman, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 31, 1970, Ser. No. 24,067
Int. Cl. D02g *3/22*; B65h *69/06*, *69/04*
U.S. Cl. 57—142 **29 Claims**

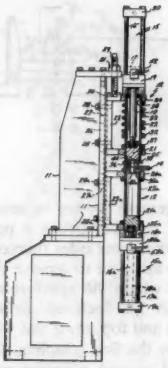
A method for splicing together the ends of glass yarns, especially tire cords composed of fiberglass, that have been previously coated with a synthetic polymer latex to render them compatible with synthetic rubber, consisting of helically wrapping together the respective ends to be spliced with a wrapping material compatible with both the synthetic polymer latex and synthetic rubber, compressing and holding the yarns or cords to be spliced or joined. The wrapping material may be a heat stable substance, an elastomeric polymer, or a thermosensitive nylon or polyester fiber.

3,634,973

APPARATUS FOR ABRADING BY EXTRUSION AND ABRADING MEDIUM

Ralph W. McCarty, Monroeville, Pa., assignor to Extrude Hone Corporation, Irwin, Pa.

Continuation-in-part of application Ser. No. 720,913, Apr. 12, 1968, now Patent No. 3,521,412. dated July 21, 1970, which is a continuation-in-part of application Ser. No. 506,472, Nov. 5, 1965, now abandoned. This application Aug. 27, 1969, Ser. No. 853,430
Int. Cl. B24b *27/00*
U.S. Cl. 51—2 R **7 Claims**



An abrasive medium is described consisting of finely divided abrasive particles uniformly distributed in a semifolid, difficulty flowable rubberlike plastic material of the consistency of putty and which forms a substantially solid matrix in carrying out the method of this invention which comprises forcing the medium over an internal surface in abrading contact therewith Representatives of such plastic material are silicone putty or silicone rubber and a nonvulcanized plastic rubberlike putty. Two forms of apparatus for carrying out the method are disclosed. The workpiece is held between two cylinders with an opening through the workpiece in communication with the adjacent cylinder chambers in which reciprocating pistons move the medium alternately from one cylinder through the workpiece opening into the other cylinder.

3,634,974

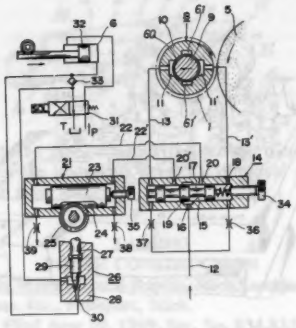
AUTOMATIC CONTROL DEVICE FOR A GRINDING MACHINE

Makoto Kikuchi, and Kuniomi Hayashi, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya City, Aichi Prefecture, Japan

Filed Dec. 19, 1969, Ser. No. 886,643
Claims priority, application Japan, Dec. 25, 1968, 43/94865
Int. Cl. B24b *49/08*
U.S. Cl. 51—5 **13 Claims**

An automatic control device for a grinding machine comprising detecting means for detecting the grinding resistance of a grinding wheel, first control means actuated in response to the grinding resistance, and second control means for controlling the feed rate of the grinding wheel support to keep the grinding resistance constant in accordance with the actuation of the first control means. The automatic control device further comprises a timer set for a longer time period

than the predetermined grinding cycle time period and energized at the same time as the start of the grinding operation,



and embodies a relay energized to actuate a wheel dressing device after the timer is timed out and the wheel support is returned to its initial position.

3,634,975

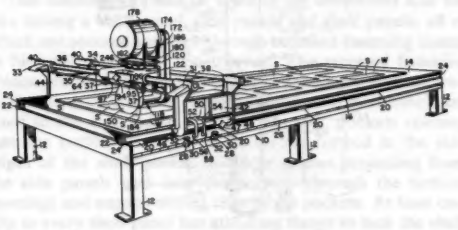
SAWING APPARATUS

James L. Hensley, Knoxville, Tenn., assignor to The Carborundum Company, Niagara Falls, N.Y.

Original application May 28, 1968, Ser. No. 732,723, now Patent No. 3,538,967. Divided and this application Jan. 9, 1970, Ser. No. 4,494

Int. Cl. B24b *7/00*

U.S. Cl. 51—35 **9 Claims**



Method and apparatus for cutting door openings and similar panel structures having angular corners. The sides of the panel opening are plunge cut by a circular saw blade or wheel from the front side of the panel leaving a connecting portion at the corners. Hinges or other hardware may then be installed and the panel is turned over. The corners are cut by the saw wheel from the back to remove the connecting portion and thereby severing the panel section that is encircled by the saw cut. The severed panel section serves as a door to conserve panel material.

3,634,976

GRINDING MACHINE

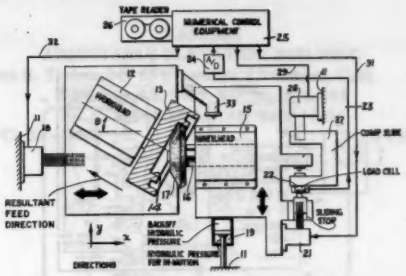
Robert S. Hahn, Northboro, and Richard P. Lindsay, Marlboro, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed Oct. 29, 1969, Ser. No. 872,038

Int. Cl. B24b *49/00*

U.S. Cl. 51—165.71 **4 Claims**

This invention relates to a grinding machine and, more particularly, to apparatus for generating a surface of revolution by the abrasive process, wherein the feed is regulated to



maintain the force between the abrasive wheel and the workpiece at a predetermined value.

3,634,977

APPARATUS FOR DRESSING ABRASIVE WHEELS

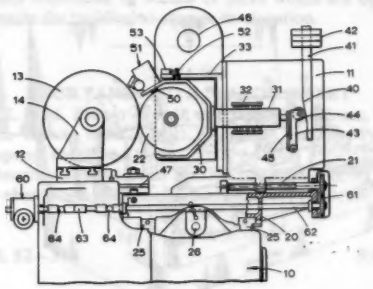
Thomas A. Bunting, Exhall, Coventry, England, assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Feb. 14, 1969, Ser. No. 799,220

Claims priority, application Great Britain, Feb. 16, 1968, 7,856/68

Int. Cl. B24b *49/00*

U.S. Cl. 51—165.87 **11 Claims**



An automatically operated trimming device fed radially of a rotating abrasive wheel in response to a predetermined dimension change of the wheel to reduce its outside diameter. The wheel is movably mounted in a head and the head is moved forwardly by the amount of reduction in the wheel diameter. The trimming operation is initiated by movement of the wheel relative to the head toward a workpiece.

3,634,978

GRINDING MACHINE

Herbert R. Uhtenwoldt, Worcester; Frederick A. Hohler, Holden, and Edward G. Robillard, Cherry Valley, all of Mass., assignors to The Heald Machine Company, Worcester, Mass.

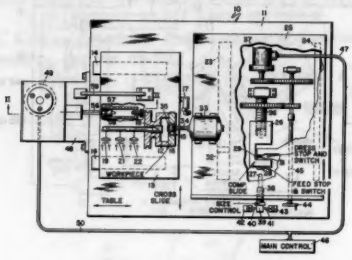
Filed June 25, 1969, Ser. No. 836,549

Int. Cl. B24b *49/08*

U.S. Cl. 51—165.92 **5 Claims**

This invention relates to a grinding machine and, more particularly, to apparatus for simultaneously finishing by the

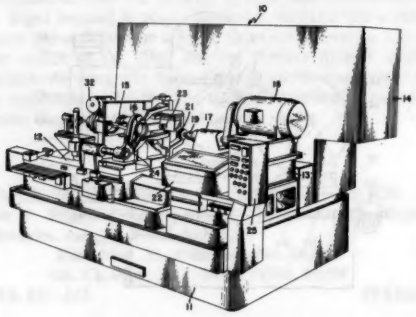
abrasive process surfaces which lie at substantial angles to one another in a workpiece.



3,634,979
GRINDING MACHINE

Edward G. Robillard, Cherry Valley; Robert H. Lizotte, Leominster, and Herbert R. Uhtenwoldt, Worcester, all of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed Nov. 25, 1969, Ser. No. 879,785
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.8 9 Claims



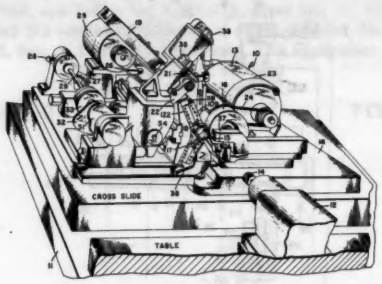
This invention relates to a grinding machine and, more particularly, to apparatus for generating a surface of revolution by the abrasive process, substantial portions of the grinding cycle being controlled by digital means.

3,634,980
GRINDING MACHINE WITH ADJUSTABLE WORKPIECE FEED

Diran Deranian, Holden; Norman S. Hume, and Herbert R. Uhtenwoldt, both of Worcester, all of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed Nov. 25, 1969, Ser. No. 879,695
Int. Cl. B24b *41/04*
U.S. Cl. 51—215 CP 10 Claims

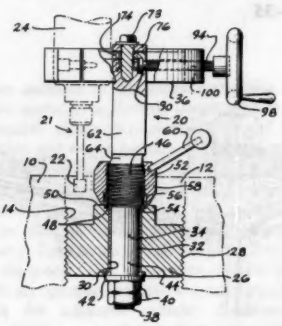
A grinding machine having a rotary workholder and a chute adjacent the workholder with an adjustable escapement to release workpieces one at a time to a transfer arm mounted for pivotal movement and having adjustable holding pins. Various adjustments can be made for different size workpieces.



3,634,981
IMPERFECT THREAD REMOVAL TOOL

James M. Conner, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed July 23, 1970, Ser. No. 57,659
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 B 4 Claims



Disclosed herein is an apparatus for removing the imperfect, runout threads in large diameter, internally threaded stud holes. The apparatus comprises a tool-holder assembly provided for automatically locating the thread-grinding tool with respect to the thread to be operated on and means for accurately guiding the tool along a helical path corresponding to that of that thread upon rotation of the tool holder.

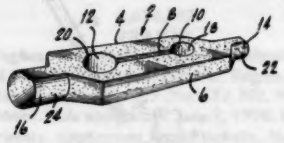
3,634,982
ABRASIVE HANDTOOL

Robert W. Martin, 1057 Pennington Road, Trenton, N.J.

Continuation-in-part of application Ser. No. 858,408, Sept. 16, 1969, now abandoned. This application Sept. 3, 1970, Ser. No. 69,339
Int. Cl. B24d *11/00*
U.S. Cl. 51—394 12 Claims

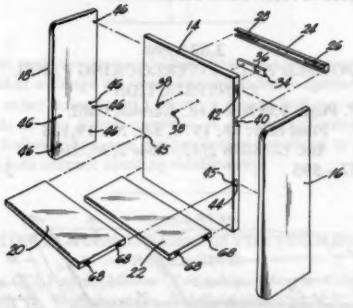
An abrasive handtool for removing rust or similar films from pipes, rods and the like in which the tool is provided with a molded body of plastic or other yieldable material and

has one or more openings therein presenting abrasive surfaces for receiving the pipe or rod, the body being compressible manually to urge the abrasive sides of the opening into



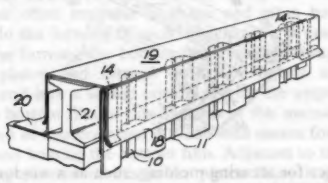
contact with the pipe to polish the surface thereof. One or both ends of the body may present cylindrical surfaces for polishing the inner surface of a pipe.

3,634,983
BOOTH CONSTRUCTION
Phillip Craig Welch, Grand Rapids, Mich., assignor to Modular Systems, Inc., Fruitport, Mich.
Filed June 19, 1969, Ser. No. 834,833
Int. Cl. A47b *3/06*; F16b *12/22*
U.S. Cl. 52—36 **9 Claims**



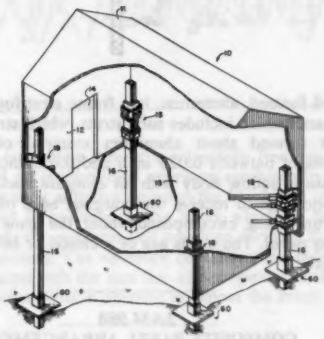
This disclosure relates to a booth for telephones and the like having a back panel, side panels and shelf panels, all of which are secured together through recessed fastening means to hide the method of construction. The recessed fastening means are so arranged that the side panels are first secured to the edges of the back panels, and then the shelf panels are fixed to the side panels. For this purpose, pockets opening into the bottom of the shelf panels are formed in the side edges of the shelf panels. Shoulder screws projecting from the side panels pass into the pockets through the bottom openings and engage slotted clips in the pockets. At least one clip in every shelf panel has a locking flange to lock the shelf panels in place when secured to the side panels.

3,634,984
METAL WALL AND COPING CONSTRUCTION WITH BIRD GUARD
Martin J. Murphy, 471 West Hylda Ave., Youngstown, Ohio
Filed Feb. 12, 1970, Ser. No. 10,718
Int. Cl. E04h *9/16*
U.S. Cl. 52—101 **5 Claims**



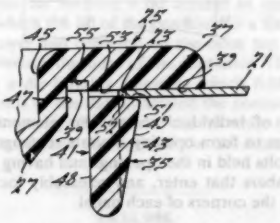
A metal wall and coping construction incorporating a bird guard and a clip for securing the several parts in assembly. The clip is hung over the upper end of a metal wall section and has configurations therein by which the bird guard is carried thereon. The clip also engages and positions the coping in the final assembly.

3,634,985
ADJUSTABLE ELEVATION BUILDING
Robert R. Tipton, 249 El Camunito, Livermore, Calif.
Filed Nov. 12, 1969, Ser. No. 876,015
Int. Cl. E04b *5/58*, *7/16*; B66f *11/04*
U.S. Cl. 52—126 **2 Claims**



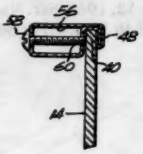
A building is provided with supporting legs which are individually adjustable by means of jacks which are operable from inside the building to change its elevation.

3,634,986
DOOR PANEL WITH PLASTIC INSERT
Ralph E. Ford, Harper Woods, and Donald J. Ternes, Grosse Pointe Woods, both of Mich., assignors to Evans Products Company, Portland, Oreg.
Continuation of application Ser. No. 681,739, Nov. 9, 1967, now abandoned. This application Sept. 22, 1969, Ser. No. 860,106
Int. Cl. E06b *3/78*
U.S. Cl. 52—316 **9 Claims**



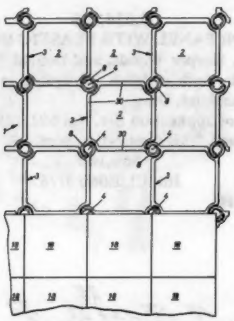
A molded, decorative, polystyrene insert has flexible locking tabs formed in a guide flange that locks behind the backface of a door panel when the insert is pressed home in an aperture in the panel.

3,634,987
ROLL FORMED ALUMINUM BOX FRAME CONSTRUCTION AND PANEL
Rafael R. Huguet, 3101 N.W. 18th St., Miami, Fla.
Filed June 23, 1969, Ser. No. 835,574
Int. Cl. E04b *5/55;* **E04c** *2/38*
U.S. Cl. 52—476 **2 Claims**



A roll formed, aluminum, box frame strut for use in making a panel which includes such struts, which struts are made of roll formed sheet aluminum material of a uniform thickness of between 0.025 inch and 0.032 inch. The struts comprise a hollow body with an elongate socket extending from one edge to receive the marginal edge of a pane with the struts being circumposed about the pane to define a building panel. The struts are of a closed or box frame configuration.

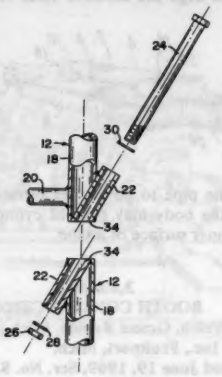
3,634,988
COMPOSITE PANEL ARRANGEMENT
Hans E. Schweitzer, and Ernst Huber, both of Wettingen, Switzerland, assignors to H. E. Schweitzer AG, Wettingen, Switzerland
Filed June 5, 1970, Ser. No. 43,678
Claims priority, application Switzerland, Nov. 10, 1969, 16622/69
Int. Cl. G09b *29/00*
U.S. Cl. 52—489 **15 Claims**



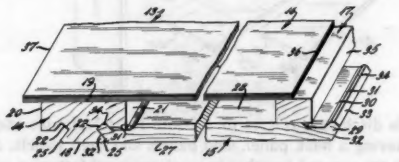
A frame of individual rectangular elements meeting at their corners to form opening mounts rectangular panels by means of bolts held in the openings and having at their heads spring members that enter, and releasably lock in, recesses provided in the corners of each panel.

3,634,989
MODULAR TOWER
Cyril B. Rogers, 3940 Doral Drive, Tampa, Fla.
Filed Jan. 19, 1970, Ser. No. 3,764
Int. Cl. E04h *12/10*
U.S. Cl. 52—584 **4 Claims**

A prefabricated modular tower structure in which the ends of each of the legs of one module are joined to the legs of an adjacent module by an integral angularly disposed connector tube adapted to receive two bolts.

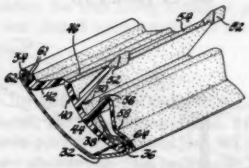


3,634,990
DOUBLE WALL INTERLOCKING PANEL CONSTRUCTION
Thomas F. Pugh, 938 Noe Ave., Eureka, Calif.
Filed Mar. 13, 1970, Ser. No. 19,185
Int. Cl. E04b *2/32;* **E04c** *2/36, 2/46*
U.S. Cl. 52—595 **3 Claims**



Apparatus for constructing a double wall panel of interlocking parts and providing means for connecting one panel to an adjacent panel in interlocking relationship, the double wall panel providing both inner and outer walls for a building with an insulating space therebetween.

3,634,991
MOLDING RETAINER
James F. Barton, Jr., and William G. Crary, both of Utica, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1969, Ser. No. 876,403
Int. Cl. F04f *19/02;* **A44b** *21/00*
U.S. Cl. 52—718 **5 Claims**



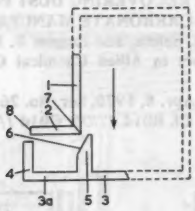
A retainer for securing molding, such as a window garnish molding or side body trim molding to an apertured support panel of a vehicle body, the retainer including a pair of integrally hinged members adapted to engage the inner curved edges of a channel-shaped molding and a lateral tongue hav-

ing a hook portion adapted to be inserted through an opening in the body and an adjacent portion which bears against the body.

3,634,992
FRAMES

Graeme Hughes, Wadesmill, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of application Ser. No. 682,302, Nov. 11, 1967, now abandoned. This application Jan. 9, 1970, Ser. No. 3,576
Claims priority, application Great Britain, Nov. 28, 1966, 53,153/66; Feb. 9, 1967, 6,173/67
Int. Cl. E06b *3/22*
U.S. Cl. 52—731 **7 Claims**

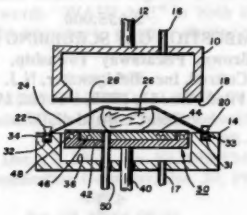


Frame members are assembled for two components in such a way that a flange on one component butts against a flange on the other component to form a closed hollow ridge along one side of the frame member. A projection completes the closed hollow ridge, and the projection functions to guide the flanges into correct abutting relationship.

3,634,993
BOTTOM PLATEN APPARATUS FOR FORMING SKIN PACKAGING

William R. Pasco, Milton Township, Morris County, and Robert O. Wolfelsperger, Fairfield, both of N.J., assignors to William E. Young, Stamford, Conn.

Filed May 6, 1970, Ser. No. 35,085
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **9 Claims**



Apparatus for forming a skin package is adapted to press both upper and lower film members tightly around a product usually or often irregular in shape and often having voids therein. In the forming of such a package, it is desirable that during the forming the bottom film be urged away from the bottom platen and formed snugly or tightly around the product and into a sealed condition with the upper film. To form the bottom film of this package in this manner the bottom platen of this invention is made with means for both supporting and heating the bottom film. Adjacent to the product supporting portion of this lower platen there is provided a conductor for pressurized air and the like, said conductor having its discharge end disposed to impinge the underside of the heated lower film so that the flow of air will lift the lower film which forms the other portion of the package.

3,634,994
METHOD OF MANUFACTURING ENVELOPES CONTAINING FREE INSERTS

Edward A. Dunne, Dublin, Ireland, assignor to Wiggins Teaper (Ireland) Limited, Dublin, Ireland

Filed Mar. 26, 1968, Ser. No. 716,101
Claims priority, application Ireland, Apr. 3, 1967, 354/67
Int. Cl. B65d *27/02, 27/04*
U.S. Cl. 53—31 **1 Claim**

Envelopes containing free or substantially free inserts are manufactured on conventional envelope machines by applying a disintegrating adhesive between the blank and insert to hold the insert in position on the blank while the blank is driven through the machine and envelope forming flaps are folded therearound. The envelope containing the insert may be manufactured with the seal flap either open or sealed and with or without a window opening to expose the insert.

3,634,995
METHOD AND APPARATUS FOR LIDDING CARTONS

Arthur E. Curtis, Ticonderoga, N.Y., assignor to International Paper Company, New York, N.Y.

Filed July 15, 1970, Ser. No. 55,106
Int. Cl. B65b *7/28, 51/02*
U.S. Cl. 53—38 **18 Claims**

An apparatus for forming a lid around an open top of a container in which the lid of the container is a flat sheet. The lid is placed over and centered on the open top of the container, and overlaps the sides of the container. The container is raised into a die-forming assembly which folds down the overlapping ends of the flat lid around the container. Glue is applied to the overlapping ends of the lid while the ends are being folded to secure the ends of the lid around the container.

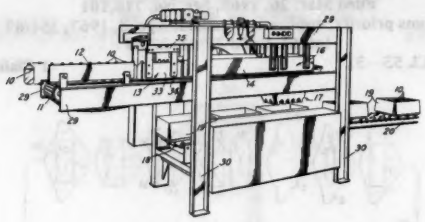
3,634,996
BOTTLE-PACKAGING MACHINE

Donald G. Reichert, Tarpon Springs, and John A. Pasteris, Clearwater, both of Fla., assignors to ABC Packaging Machine Corporation, Largo, Fla.

Filed Nov. 24, 1969, Ser. No. 879,163
Int. Cl. B65b *57/10, 21/16, 35/30*
U.S. Cl. 53—61 **5 Claims**

A bottle-packaging machine for assembling a charge of bottles having an equal number of bottles in each of a given

number of rows on a supporting grid structure and for shifting the charge sideways to allow the bottles to drop between the empty spaces in the grid into an empty case. The cases are conveyed into position below the bottle assembly station



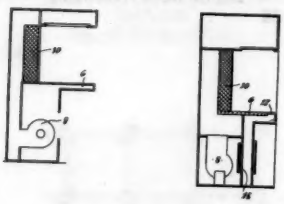
and are in turn elevated to fit snugly over the grid for receiving the bottles when they are dropped. The operation of the machine is entirely automatic through certain electrically controlled, air-actuated piston moving elements and motor-driven conveyors for both the bottles and cases.

3,634,997

METHOD AND APPARATUS FOR PRODUCING ASEPTICALLY PACKAGED STERILE ARTICLES

Thomas Theodore Tait, 9-11, The Quadrant, Richmond upon Thames, Surrey, England

Filed Oct. 22, 1968, Ser. No. 769,557
Claims priority, application Great Britain, Oct. 27, 1967, 49,052/67
Int. Cl. B65b *55/14, 63/08, 67/10*
U.S. Cl. 53—127 **6 Claims**



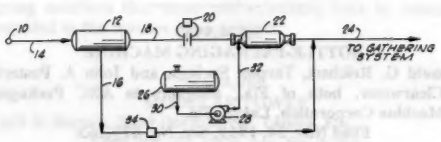
Aseptically packaged articles made of a plastics material are made by forming them in a moulding machine at a sterilizing temperature, introducing them while sterile from the machine into a stream of sterile air and packing them in a sterile wrapping in that stream of sterile air.

3,634,998

METHODS OF PRODUCING A PLURALITY OF WELL STREAMS

Edwin B. Patterson, 8517 Arlington Drive, Oklahoma City, Okla.

Filed Dec. 29, 1969, Ser. No. 888,496
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **9 Claims**



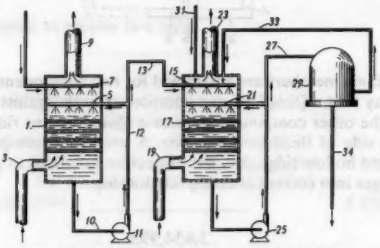
The present invention relates to methods of producing a plurality of predominantly gaseous well streams from wells at different locations which are conducted by a gathering system to a central processing location. By the present invention, liquid desiccant is continuously intimately mixed with the well streams at each well location so that portions of the water contained therein are removed thereby preventing the subsequent formation of hydrates. The well stream-liquid desiccant mixtures are conducted by the gathering system to the central location and combined. The combined liquid desiccant is separated from the combined well streams at the central location and regenerated by removing the absorbed water therefrom. Portions of the regenerated liquid desiccant are then returned to each of the well locations for remixing with the well streams.

3,634,999

METHOD FOR RECOVERING DUST PRODUCED IN SODIUM CARBONATE MANUFACTURE

Carlton J. Howard, Salina, and Eugene B. Port, Solvay, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 8, 1970, Ser. No. 26,544
Int. Cl. B01d *47/06;* **C01d** *1/30*
U.S. Cl. 55—72 **12 Claims**



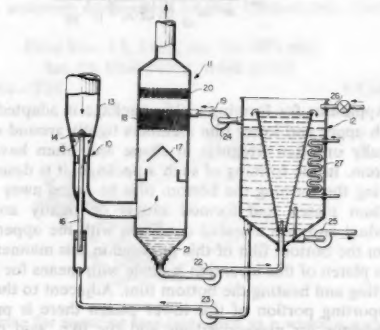
Dust and fines issuing from trona processing systems in the manufacture of sodium carbonate are removed by scrubbing the dust ladened gases with an aqueous scrubbing solution under conditions sufficient to remove the fines from the gases and preferably effect particle growth of said dust and fines in the scrubbing solution and separating the solids of larger particle size and returning them to the trona processing system.

3,635,000

COMBUSTION GAS SCRUBBING SYSTEM

Robert F. Brown, Piscataway Township, N.J., assignor to Research-Cottrell, Inc., Bridgewater, N.J.

Filed Mar. 13, 1970, Ser. No. 19,386
Int. Cl. B01d *47/00*
U.S. Cl. 55—89 **5 Claims**



Suspended particulate matter, including sulfur-containing compounds of calcium and magnesium, and sulfur oxides are

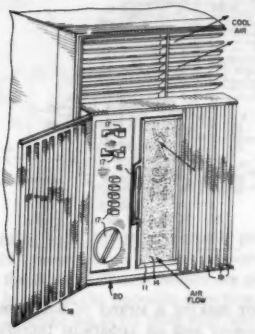
removed from combustion gases by passing the gases successively through a high-velocity venturi-type scrubber and a wetted film-packed bed scrubber. Scrubbing liquid from the venturi scrubber and from the packed bed scrubber may, after being clarified, be recirculated to the two scrubbing stages.

3,635,001

FILTER INDICATOR

Paul Komroff, Union, N.J., and Harper Landell, Fort Washington, Pa., assignors to National Union Electric Corporation, Jersey City, N.J.

Filed Aug. 5, 1969, Ser. No. 847,672
Int. Cl. B01d *27/00*
U.S. Cl. 55—274 **2 Claims**



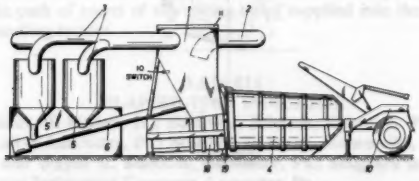
An air conditioner filter indicator located behind and in contact with the filter causes indication of the need for cleaning the filter as the filter becomes dirt laden. A legend such as the words "WASH ME" formed as part of the indicator is transferred to the filter since no dirt will collect on the filter portion in contact with the legend, and contrast increases between that portion and the dirt-collecting portion of the filter. In another embodiment, the indicator including a legend such as "WASH ME" is placed on the front surface of the filter and originally is of the same color as the filter. Increasing contrast between filter and indicator as the filter becomes dirt laden causes the legend to become visually prominent. The words "WASH ME" in both embodiments serve to remind the operator to clean or change the filter.

3,635,002

GARBAGE DISPOSAL UNIT

Adolf Ries, Schnabel-Henning-Str. 30, Bruchsal/Baden, Germany

Filed Dec. 17, 1969, Ser. No. 885,924
Claims priority, application Germany, Dec. 20, 1968, G 68 12 485.6
Int. Cl. B01d *50/00*
U.S. Cl. 55—315 **2 Claims**



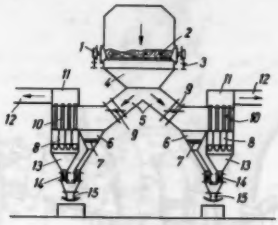
A garbage main delivers garbage to a hopper from which dust and fines are evacuated to a cyclone by compressors which deliver the air from the cyclone to a filtered flue. The garbage is intermittently rammed from the hopper into an adjacent receptacle where the garbage is compressed.

3,635,003

CENTRIFUGAL DUST COLLECTOR FOR THE WASTE GASES OF A SINTER MACHINE FOR ORES, BUILDING MATERIALS AND THE LIKE

Josef Schindling, Frankfurt am Main-Unterliederbach, and Hermann Muller, Frankfurt am Main, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 18, 1969, Ser. No. 850,839
Claims priority, application Germany, Sept. 6, 1968, G 67 52 541
Int. Cl. B01d *45/12*
U.S. Cl. 55—344 **3 Claims**



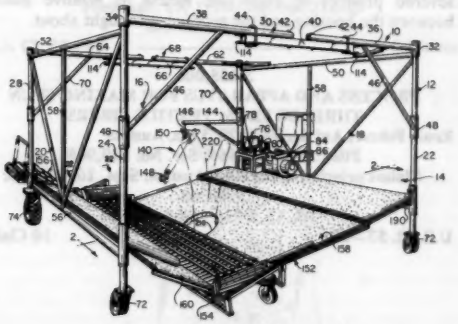
Dust-ladened gases are drawn into a series of hoppers beneath the grate of a sintering machine and then passed into a centrifugal dust collector which extends along at least one side of the sintering machine.

3,635,004

ORCHARD MACHINE

Byron K. Webb, and Clarence E. Hood, both of Clemson, S.C., assignors to Research Corporaton, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,585
Int. Cl. A01d *55/18*; **A01g** *19/06*
U.S. Cl. 56—235 **12 Claims**



A general purpose, self-propelled, orchard machine has a rectangular vertical frame mounted on driven and steerable wheels with the machine straddling fruit trees and supporting an operator who, through a single hydraulic system, controls the movements of the machine and the operation of the arrangements carried thereby. The frame has collapsible front and rear sections whereby the width thereof is reduced for travel on public roadways and also has opposing side sections that support laterally inwardly and outwardly movable fruit catching sections disposed adjacent the bottom of the machine which carries an overlying tree shaker. Such catching sections have caster wheels and are moved apart as the machine straddles a tree and brought together to encircle the tree and catch the falling fruit which is transported rearwardly and then laterally of the machine by conveyors associated with the catching sections. In spraying, trimming or

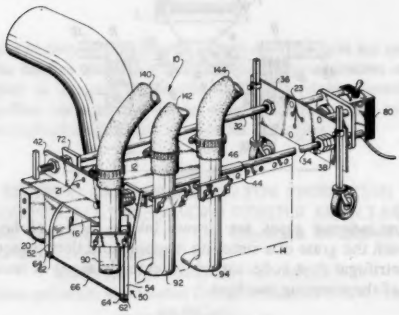
otherwise treating fruit trees, the catching sections are removed and the frame sections carry appropriate spraying, cutting and other arrangements.

3,635,005

MUSHROOM HARVESTER

Sverker P. E. Persson, University Park, Pa., assignor to Research Corporation, New York, N.Y.

Filed June 18, 1970, Ser. No. 47,330
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 R **4 Claims**



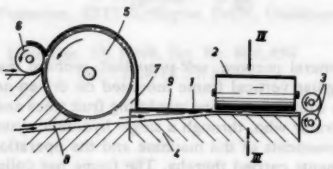
A harvester for mushrooms having an open-ended, generally tunnellike housing within which is provided a cutter blade for severing the mushrooms stalks close to the surface of the ground is provided. Means are also provided for directing at least one stream of air adjacent the base of the mushroom being severed and further suction means are mounted in association with the housing for conveying the severed product to collection means as relative motion between the housing and the product is brought about.

3,635,006

PROCESS AND APPARATUS FOR MAKING SPUN THREADS FROM TEXTILE FIBERS

Ernst Fehrer, Auf der Gugl 28, Linz, Austria

Filed Aug. 14, 1969, Ser. No. 849,968
Claims priority, application Austria, Sept. 16, 1968, A 8984/68
Int. Cl. D01g *15/68, 15/58*
U.S. Cl. 57—50 **10 Claims**



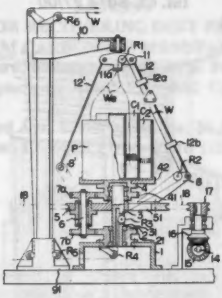
A strand of loose fibers is moved in the longitudinal direction of said strand, which is frictionally contacted on two opposite sides with two surfaces, which are moved relative to each other in contact with said strand transversely to the longitudinal direction of the strand to twist the latter so as to form a thread, which is withdrawn while being held against rotation.

3,635,007

METHOD AND AN APPARATUS FOR MAKING A STRAND OF WIRES AND FEEDING THE SAME AT HIGH SPEED

Zenzo Yoshida, Mito-shi, Japan; Hiroshi Miyazaki; Tokuji Yoshida, and Hiroaki Kobayashi, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Yoshida Engineering Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1970, Ser. No. 5,597
Int. Cl. D07b *3/00, 3/12*
U.S. Cl. 57—58.52 **11 Claims**



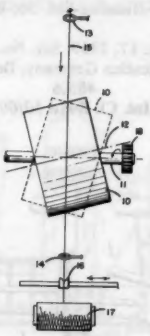
A method for making a strand of wires and feeding the same at high speed and an apparatus therefor comprising: collecting together, by a collecting die provided above a wire supply source a plurality of wires delivered from said source resting on a tray which is not rotated at a great speed, passing the collected group of wires through a guide roller carried on a flyer located below and radially outwardly of said collecting die and circling around said tray, then passing the group of wires downwardly in the position of the rotational axis of said flyer, thereby twisting said group of wires at said die and also at said rotational axis, and then feeding the resulting strand outside the system.

3,635,008

YARN TREATING APPARATUS

Warren H. Guy, Glen Mills, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 14, 1970, Ser. No. 28,362
Int. Cl. D02g *1/08*
U.S. Cl. 57—77.4 **8 Claims**



Apparatus for producing a filament interlaced yarn comprises a cylindrical roller mounted for rotation on an axis extending at an angle to its longitudinal central axis. The yarn is pulled over the roller at right angles to the axis of rotation and rotation of the roller causes the yarn to roll back and forth across the face of the roller. The rolling of the yarn

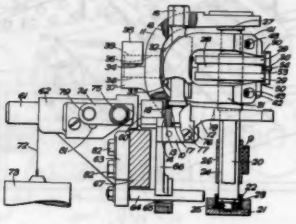
produces alternately S and Z twist which causes the filaments to become interlaced or tangled to a degree that the yarn can be used in ordinary textile operations without further twisting.

3,635,009

APPARATUS FOR FALSE TWISTING YARN

Denis Albert Edward Mattingly, Macclesfield, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Apr. 3, 1970, Ser. No. 25,533
Int. Cl. D01h *7/92, 7/46*
U.S. Cl. 57—77.45 **6 Claims**



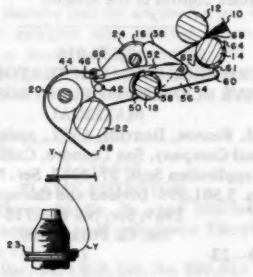
A false twisting head having a rotatable drive shaft which head is slidably mounted on a fixed support in a direction transverse to the drive shaft axis. Means are provided for urging the head in one or the opposite direction with respect to the support to engage the drive shaft with one or the opposite sides of an endless moving drive belt.

3,635,010

ENDS DOWN DETECTOR

Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Corporation, Spartanburg, S.C.

Filed Oct. 2, 1969, Ser. No. 863,286
Int. Cl. D01h *13/18*
U.S. Cl. 57—84 **10 Claims**



Method and apparatus to detect the breakage of a yarn end, commonly called an ends down, and in response to the detection actuate, a roving stop to rotate the roving stop into the path of travel of the roving being supplied into the fiber handling system.

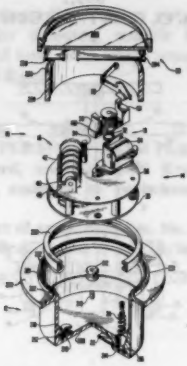
3,635,011

ELAPSED-TIME INDICATOR

Stuart M. Pindell, Jr.; Donald J. Johnson; Robert E. Fickes, all of Lancaster, Pa.; Malcolm R. Perry, Mooresville, N.C., and Wayne K. Radcliffe, Lancaster, Pa., assignors to Datcon Instrument Company, Lancaster, Pa.

Filed Jan. 14, 1970, Ser. No. 2,899
Int. Cl. G04c *1/04;* G04b *5/04*
U.S. Cl. 58—41 A **27 Claims**

The indicator has a casing carrying two plates mounting the gear train, motor assembly, escapement, and counter. The motor assembly includes a solenoid which impulses a flywheel to wind a mainspring which advances the counter through the gear train at a rate determined by the escapement. The plates and gearing are formed of plastic and this assembly is shock mounted in the plastic casing. Features hereof include a helical mainspring having opposite ends engaging between the baseplate and the flywheel respectively, direct pivotal mounting of the movement shafts in the plates without jewel bearings, a dynamically balanced armature for the motor assembly, coil spring leads from the motor assembly to the terminals on the plastic casing, and the application of ultrasonic welding techniques to the assembly.

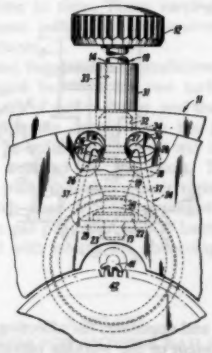


3,635,012

SET STEM MECHANISM FOR WATCHES

Raymond J. Grohoski, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Apr. 13, 1970, Ser. No. 27,523
Int. Cl. G04b *37/06*
U.S. Cl. 58—99 **5 Claims**



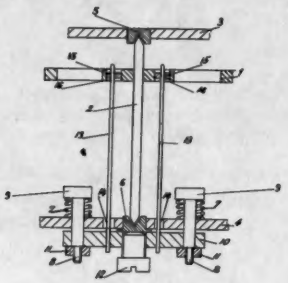
A set stem mechanism for watches comprising a set stem having a set pinion integral therewith and a shaped body portion which is designed for engagement with a stem bracket in either a set or an idle position. A stem release sleeve is slidably mounted about the set stem to contact the bracket disengaging it from the stem in order to facilitate removal of the crown and stem assembly.

3,635,013

BIASSED OSCILLATOR ARRANGEMENT

Hanns F. Bertsch, Kronenstrasse 30; Ottmar Schlachtberger, Auf Rinelen 2, and Horst Graf, Kornerstrasse 24, all of Schwenningen, Germany

Filed Dec. 17, 1969, Ser. No. 889,849
Claims priority, application Germany, Dec. 17, 1968, P 18 15 099.7
Int. Cl. G04b 17/00; G04c 3/04
U.S. Cl. 58—107 18 Claims



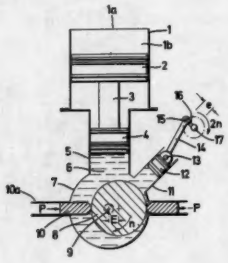
The balance wheel of a watch or clock is continuously biassed during oscillations of the balance wheel, by a single resilient rod concentric with the axis of the balance wheel, or by a pair of diametrically arranged resilient rods parallel to the axis, to move toward a central position so that the balance wheel oscillates at an inaudible frequency between 10 and 50 Hz.

3,635,014

METHOD AND DEVICE FOR CONTROLLING THE PISTON MOVEMENT OF HYDROSTATIC PRIME MOVERS

Herwig Kress, Klocken 5, 7981 Oberzell, Germany

Filed Jan. 26, 1970, Ser. No. 5,675
Claims priority, application Germany, Jan. 27, 1969, P 19 03 851.8
Int. Cl. F02b 41/00
U.S. Cl. 60—19 11 Claims



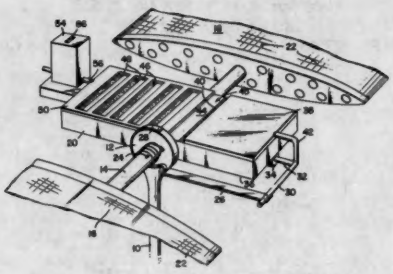
A method of and apparatus for affecting the chronological course of movement of the working pistons of internal combustion operated prime movers, in which for purposes of converting the reciprocatory movement of the pistons into a rotary movement the transfer of power is effected through the intervention of hydraulic fluid in at least one hydraulic chamber, and according to which the quantity of hydraulic fluid in said hydraulic chamber is periodically changed whereupon following each change after a time period necessary for the working piston to carry out and/or two and/or four strokes, the quantity of hydraulic fluid prior to said change is restored in said hydraulic chamber.

3,635,015

RADIANT-ENERGY-DRIVEN ORIENTATION SYSTEM

Ronald L. Samuels, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Original application Dec. 21, 1967, Ser. No. 692,400, now Patent No. 3,515,594, dated June 2, 1970. Divided and this application Sept. 19, 1969, Ser. No. 859,541
Int. Cl. F03g 7/06, 7/02
U.S. Cl. 60—23 6 Claims



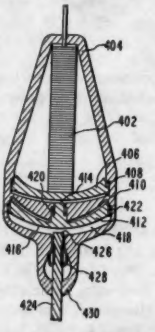
Radiant energy apparatus which automatically orients itself relative to the radiation source. A sensing panel having an absorbing surface to be exposed generally toward the source and a radiating surface shielded from the source but thermally connected to the absorbing surface is variably covered by a sensor shutter which is controlled by passive, bimetallic, radiation-direction-sensitive means. A power drive unit including a thermally expansive fluid-filled cylinder and piston connected therewith is mounted on the panel and drives an orienting mechanism in response to the temperature of the sensing panel as determined by its angle of exposure toward the source, the degree of its shielding therefrom as by the sensing shutter, and the rate of thermal radiation from the sensing panel. The power drive element may also drive the second shutter for variable shielding of the panel for additional feedback control of the system.

3,635,016

ELECTROMECHANICAL ACTUATOR HAVING AN ACTIVE ELEMENT OF ELECTROEXPANSIVE MATERIAL

Glendon M. Benson, Danville, Calif., assignor to Physics International Company, San Leandro, Calif.

Original application Sept. 27, 1967, Ser. No. 671,065, now Patent No. 3,501,099. Divided and this application July 16, 1969, Ser. No. 870,715
Int. Cl. F01k 25/00
U.S. Cl. 60—23 2 Claims



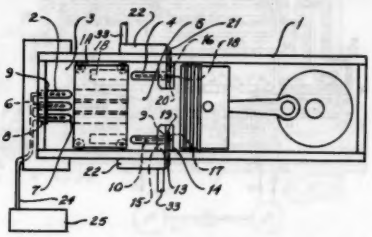
An electromechanical transducer having an active module of electroexpansive material, such as piezoelectric material. A chamber filled with noncompressible fluid that is bounded by first and second plungers or diaphragms, the first plunger

being operatively connected to the module. The area of the second plunger is established at a size smaller than the first plunger so as to provide for motion amplification of the relatively small mechanical displacement of the electroexpansive module. An improved electroexpansive module and a method for making the same are also disclosed.

3,635,017
COMPOSITE THERMAL TRANSFER SYSTEM FOR CLOSED CYCLE ENGINES

Donald A. Kelly, 58-06 69th Pl., Maspeth, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,269
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 **7 Claims**



The composite thermal transfer system consists of both internal and external means for rapidly transferring heat into the hot side, and removing heat from the "cold," heat sink side of C.C.E.'s.

The external transfer arrangement consists of both conventional heating and cooling means along with hot and freezing cold air flow from seried air temperature splitters.

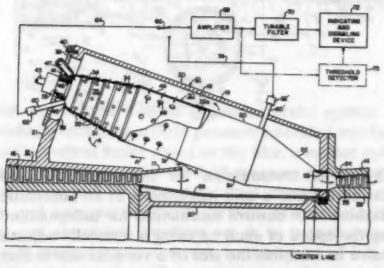
The internal transfer arrangement consists of multiple conduction rods within the hot and cold sides of the C.C.E. The cooling conduction rods carry liquid coolant into and out of each rod and are independently connected to a liquid coolant manifold reservoir. The hot conduction rods are hollow so that tiny burner tubes provide heating all along the length of the rod bore, and thereby into the engine hot gas volume.

The combined external and internal thermal transfer system provides a means of overcoming the usual heat transfer difficulties, particularly in the Stirling and Brayton cycle machines, but is also adaptable to Rankine cycle machines.

3,635,018
FLAME DETECTOR

Serafino M. De Corso, Media, Pa., and Mitchell I. Meyer, Merrick, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,413
Int. Cl. F02c *7/00*; G08b *21/00*; H04r *17/02*
U.S. Cl. 60—39.09 R **4 Claims**



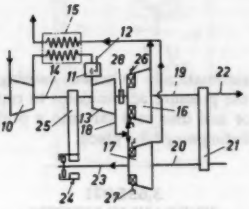
Apparatus for detecting the existence of a flame in a combustion chamber by means including an electroacoustic device for converting audible sounds which occur only when the flame is present into an electrical signal having a frequency component corresponding to the frequency of the audible sound. If necessary, a filter may be incorporated into the converting means for eliminating frequencies which occur due to the introduction of fuel and/or a gas containing oxygen into the combustion chamber without the existence of a flame.

Alternatively, a threshold detector can be incorporated into the system for detecting audible sounds above a predetermined sound level only, which sounds are those due to the existence of a flame.

3,635,019
GAS TURBINE POWER PLANT

Sven-Olof Kronogard, and Clas-Olof Kronogard, both of Lomma, Sweden, assignors to Turbokonsult AB, Malmo, Sweden

Continuation-in-part of application Ser. No. 672,869, Oct. 4, 1967. This application Jan. 20, 1970, Ser. No. 4,275
Int. Cl. F02c *3/10*
U.S. Cl. 60—39.16 **9 Claims**



A gas turbine power plant may consist of a gas producer, a main power turbine utilized for driving a load, a swell as an auxiliary turbine fed by the same gas producer as the main power turbine and utilized for some auxiliary purpose. In many installations the required output from the main power turbine, as well as from the auxiliary turbine may vary considerably from time to time. These varying working conditions will of course influence the requirements of output from the gas producer.

In order to meet these varying conditions, power transfer means are arranged between the two turbines, as well as between any or both of said turbines, and the gas producer in such a manner that the output from the power-producing components may be utilized in the best way depending on the occasional load imposed on the plant. To facilitate the governing of the plant the main power turbine and the auxiliary turbine each have a rotor arranged in parallel gas passages from the gas producer, and at least one of said turbines is provided with means for governing the gas supply therefrom.

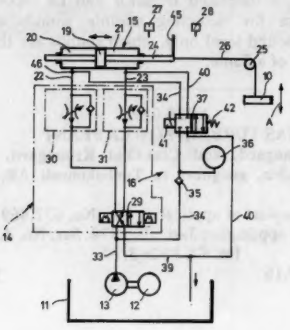
3,635,020
DRIVING SYSTEM FOR MOVING RAILS OF TEXTILE MACHINES

Werner Mahlmann, Rechberghausen, Germany, assignor to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany

Filed Oct. 28, 1970, Ser. No. 84,850
Claims priority, application Germany, Oct. 28, 1969, P 19 54 194.7
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 **7 Claims**

In a yarn winding textile machine, with a main hydraulic control circuit that causes reciprocation of a ring rail, there is associated a hydraulic emergency resetting circuit which in-

cludes a solenoid valve also forming part of the main circuit and a hydraulic pressure accumulator. The resetting circuit is connected in such a manner to the hydraulic motor of the main control circuit that upon electric power failure the sole-



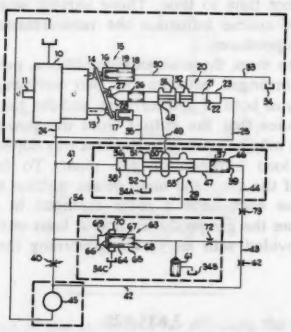
noid valve is automatically switched, causing the hydraulic pressure from the pressure accumulator to rapidly move said hydraulic motor and thus said rail into a position where no normal yarn winding may take place.

3,635,021

HYDRAULIC SYSTEM

Kenneth G. McMillen, Wolcottville, and Wendell E. Miller, Warsaw, both of Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 16, 1969, Ser. No. 867,021
Int. Cl. F15b *1/00*; F04b *49/00*, *1/26*
U.S. Cl. 60—52 US **33 Claims**



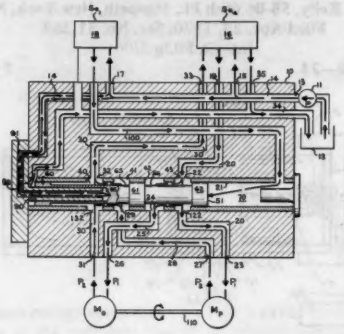
Pump controls having a sensor valve that operates between two positions to control the displacement of a pump in response to pressure differentials caused by flow through a variable orifice. Override of the sensor valve is provided by a pressure and displacement sensitive valve thereby limiting the input torque of the pump.

3,635,022

CONTROLLABLE CONDITION ROTARY DRIVE SYSTEM

Richard J. Lewis, New Hartford, N.Y., assignor to The Bendix Corporation

Filed Sept. 18, 1970, Ser. No. 73,474
Int. Cl. F15b *11/16*
U.S. Cl. 60—53 R **9 Claims**



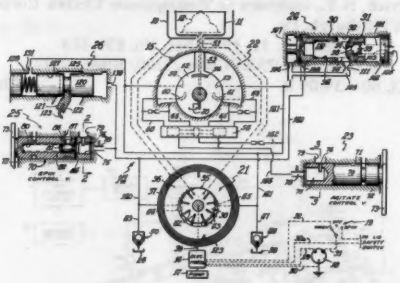
A system comprising a pair of reversible hydraulic motors driving a common rotary output shaft such as a machine tool drive lead screw or the like. A control system consisting of a hydraulic transfer valve for selectively coupling the hydraulic motors in either a series or parallel drive arrangement to selectively obtain high-torque low-speed or low-torque, high-speed mode of operation during either forward or reverse drive conditions. An actuator for the transfer valve and a flow-reversing valve both adapted to be separately responsive to electrical digital-type signals of the type generated by numerical machine tool computer control systems.

3,635,023

HYDRAULIC TRANSMISSION

Robert W. Wayman, Bloomfield Hills, Mich., and Howard C. Wiemer, Muncie, Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 31, 1968, Ser. No. 772,298
Int. Cl. F16d *31/06*; D06f *23/04*
U.S. Cl. 60—53 R **7 Claims**



A hydraulic transmission for independently driving an agitator motor and a spin mechanism of an automatic washing machine with control mechanism for independently controlling the speed of each by using a manually adjustable rotary valve to establish the size of a variable-size orifice in the fluid exhaust line from the agitator motor and the spin

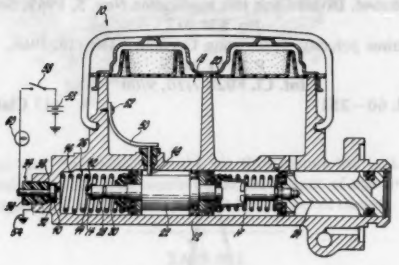
mechanism to control the speed of same. The rotary valves are positioned in a stationary portion of the transmission to provide for connection to the manual adjustment means.

3,635,024

MASTER CYLINDER ASSEMBLY

Robert W. Graham, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1970, Ser. No. 1,126
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 E **13 Claims**



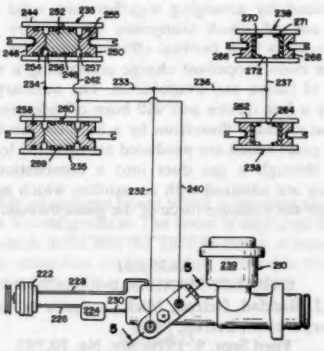
A master cylinder assembly including a switch operative in accordance with the position of a hydraulic fluid pressurizing piston and an indicator device energized in accordance with the switch operation so as to indicate when the piston is positioned outside of predetermined limits. An insulating member is provided for preventing electrolysis of the hydraulic fluid between the switch contacts.

3,635,025

HYDRAULIC BRAKE SYSTEM

Herman M. Huffman, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 19, 1969, Ser. No. 800,589
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 E **4 Claims**



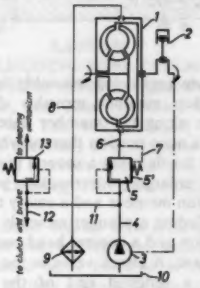
A dual power and manual hydraulic brake system for a motor vehicle including a fluid pressure operated mechanism for actuating wheel brake shoes or the like, a master cylinder containing a power or primary fluid pressure generating portion and a manual or secondary fluid pressure generating portion, and separate hydraulic circuits associated with the primary and secondary portions so as to provide separate power and manual brake systems. In the event of failure of one of the systems, the other system can operate independently thereof. Brake pedal means are provided for concurrently actuating the primary and secondary portions of the master cylinder.

3,635,026

MOTOR VEHICLE DRIVE WITH A HYDRODYNAMIC TORQUE CONVERTER AND HYDRAULICALLY OPERABLE CLUTCHES

Wilhelm Hahn, Bergisch-Gladbach, and Helmuth Hoffmann, Refrath-Lustheide, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Dec. 4, 1969, Ser. No. 882,162
Claims priority, application Germany, Dec. 5, 1968, P 18 12 840.0
Int. Cl. F16d 31/06
U.S. Cl. 60—54 **5 Claims**



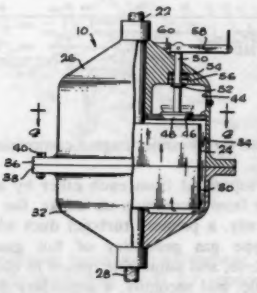
A vehicle drive with a hydrodynamic torque converter and hydraulically controlled clutches and brakes, in which the control pressure fluid conveyed to the means for actuating said clutches and brakes is controlled automatically in conformity with the respective torque exerted by the hydrodynamic torque converter.

3,635,027

ROTOR PRESTARTER AND BRAKE

Max W. Moldenhauer, 241 Rennie Avenue, Venice, Calif.

Filed Dec. 22, 1969, Ser. No. 886,969
Int. Cl. F16d 31/06, 33/00
U.S. Cl. 60—54 **6 Claims**



An apparatus for transmitting rotational torque from a power shaft to a load shaft employing a pair of facing impellers, the impellers operating within a fluid chamber with each impeller being capable of forcing fluid into contact with the other impeller and effecting rotation thereof, a valve con-

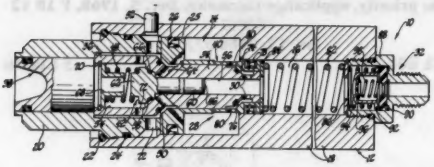
trolled fluid relief chamber which when open to the fluid chamber causes nontransmission of rotational torque from one impeller to the other.

3,635,028

FLUID PRESSURE PRODUCING ASSEMBLY

Clarence A. Sherman, Birmingham, Mich., assignor to Benton Corporation, Troy, Mich.

Filed Nov. 19, 1969, Ser. No. 878,100
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 A **6 Claims**



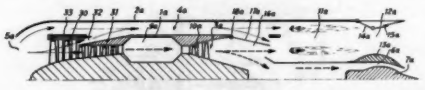
A fluid pressure producing assembly including a housing with a first piston member movably disposed in a first chamber and an elongated member extending through the first piston with a nose portion thereof which is disposed in a second chamber for defining a second piston. The elongated member has an enlarged intermediate portion which seats with the first piston member and a cavity therein with a relief valve means including a plunger movably disposed in a bore in the nose portion and a conical head section for engaging a female conical seat. A check valve in the form of a sleeve is disposed about a reduced end of the nose portion for blocking fluid communication between the first chamber and the outlet in the second chamber in response to a predetermined pressure in the second chamber or the outlet with the relief valve means thereafter decreasing the pressure in the first chamber in proportion to the increase in pressure in the second chamber.

3,635,029

COMPOSITE GAS TURBINE RAMJET ENGINE

Claude Charles Felix Menioux, Boulonge-sur-Seine, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Sept. 5, 1969, Ser. No. 855,608
Claims priority, application France, Sept. 6, 1968, 165337
Int. Cl. F02k 3/02, 3/08
U.S. Cl. 60—224 **7 Claims**



A composite turbo-ramjet engine comprising, in combination:

two ducts separated from each other by a wall and supplied with air from a common air intake, the two ducts consisting of, firstly, a primary turbojet duct which includes a gas-turbine-type gas generator of hot gases, a primary discharge nozzle, and adjustable means to block off the said primary nozzle, and secondly, a secondary duct including a secondary combustion chamber for ramjet operation and a secondary discharge nozzle;

at least one connecting passage between the primary and the secondary ducts, the said passage being formed through the said wall downstream of the turbine and upstream of the secondary combustion chamber;

adjustable obturation means for the said connecting passage, and

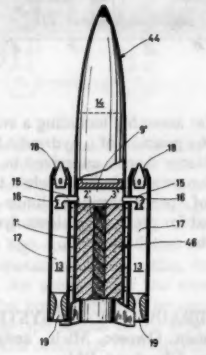
adjustable obturation means for the secondary ramjet duct upstream of the secondary combustion chamber.

3,635,030

DEVICE FOR PRODUCING BURNABLE GASES FOR THRUST ENGINES

Johannes Schubert, Unterhaching, and Rolf Fuchs, Poing, both of Germany, assignors to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn bei Munich, Germany

Original application Sept. 29, 1967, Ser. No. 671,658, now abandoned. Divided and this application Nov. 5, 1969, Ser. No. 871,012
Claims priority, application Germany, Oct. 18, 1966, P 15 71 248.8
Int. Cl. F02k 7/10, 9/06
U.S. Cl. 60—251 **17 Claims**



Burnable gases under pressure for operating engines such as thrust engines and particular rocket and ramjet engines are produced by arranging together two solid propellant charges, one of which comprises an auxiliary propellant charge having a high thermal efficiency and the other constituting a main propellant charge comprising a material of low heat of fusion and evaporation. The auxiliary charge is ignited by a fuse device and will burn off adjacent the main charge but shielded therefrom by a burn-off insulation. The burnable gases which are produced are directed by their own pressure through a gas duct into a combustion chamber where they are admixed with an oxidizer which may be supplied under the pressure force of the gases themselves.

3,635,031

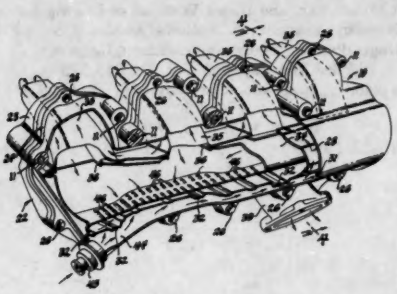
EXHAUST MANIFOLD REACTOR

Mitchell J. Haddad, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1970, Ser. No. 70,753
Int. Cl. F01n 3/10
U.S. Cl. 60—30 R **7 Claims**

In preferred form, a sheet metal casing is divided by wall means into interior and exterior reaction chamber portions which receive a mixture of air and exhaust gases through a plurality of exhaust port liners connected with one portion and discharge the reaction products through outlet means connected with the other portion. A jacket surrounds the casing defining an air chamber through which fresh air is circulated, where it is preheated and acts as an insulator. Jacket outlets surrounding the inlet port liners deliver the preheated

air into the inlet ports, where it mixes with the engine exhaust gases at the ends of the port liners for subsequent reaction in the reaction chamber. Air distribution means provide



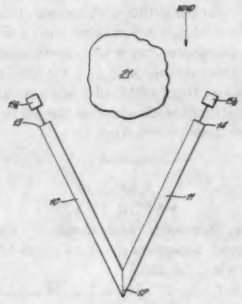
for proper distribution of the air throughout the jacket air chamber including circumferential movement of the air from a longitudinal distribution passage to the jacket outlets.

3,635,032

BOOM FOR OIL SPILT ON WATER

Denis Henry Desty, Weybridge; Leslie Bretherick, Ascot, and Michael Guthrie Webb, Isle of Wight, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Aug. 26, 1969, Ser. No. 853,116
Claims priority, application Great Britain, Sept. 13, 1968, 43,697/68
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **4 Claims**



A floatable oil spillage boom which comprises two arms so as to give a V-configuration The boom is deployed downwind of a slick which drifts into the apex so that it is concentrated to facilitate collection or destruction. Inflatable booms, e.g. air- and water-inflated are particularly suitable.

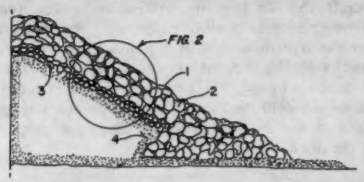
3,635,033

BITUMINOUS COMPOSITIONS IN HYDRAULIC CONSTRUCTIONS

Hylco J. Th. Span, De Bilt, and Albert J. Woestenenk, Hintham, both of Netherlands, assignors to Bitumarin N.V., Zaltbommel, Netherlands

Filed Dec. 2, 1969, Ser. No. 881,607
Claims priority, application Great Britain, Dec. 16, 1968, 59,690/68
Int. Cl. E02b *3/06*
U.S. Cl. 61—4 **8 Claims**

A method is provided for the stabilization of a water permeable breakwater construction composed of open layers of stone or block. This method includes the steps of applying a viscous bituminous composition in discrete patches on the lining surface of the stone or block layers to form a discontinuous layer of the bituminous composition on the lining surface and then flowing the bituminous patches downwardly



through the lining surface to thereby extend the discontinuous layer of the bituminous composition beneath the lining surface. The finished breakwater construction has openings which extend completely through the bituminous layer and all the layers of stone or block.

3,635,034

METHOD OF PLUGGING MINE PASSAGES HAVING WATER EMANATING THEREFROM

Tommy R. Gardner, and John A. Knox, both of Duncan, Okla., assignors to The United States of America as represented by the Secretary of the Interior

Filed July 9, 1969, Ser. No. 840,494
Int. Cl. E01g *5/10*; E21f *15/00*
U.S. Cl. 61—35 **4 Claims**

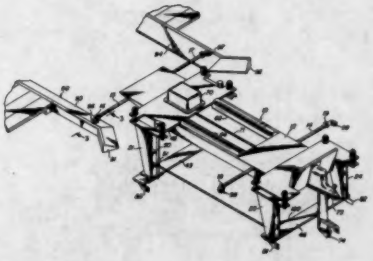
The present invention relates to a method of plugging a mine passage and the like, having water emanating therefrom wherein a particulated solid material is deposited in the passage to form an initially permeable plug therein. The particulated solid material is of a type which will react with the water as it flows through the plug thereby neutralizing the water and forming a water-insoluble precipitate therein. As the flow of water continues through the plug, the permeability of the plug is progressively reduced by the precipitate and the flow of water subsequently shut off.

3,635,035

HYDROPLANE TRANSPORT SYSTEM

Richard R. Greer, 6122 E. Indian School Rd., Scottsdale, Ariz.

Filed Mar. 23, 1970, Ser. No. 21,817
Int. Cl. B63b *35/52*
U.S. Cl. 61—67 **6 Claims**



A hydroplane system including a hydroplane having a plurality of vertically depending struts for supporting planing members extending therebetween. The struts are divided into forward and return pairs and are interconnected by braces pivotally secured to the struts near the bottom thereof. Each of the struts includes a plurality of auxiliary planing members secured thereto for effectively increasing the lift as the hydroplane craft settles into the water; further, an adjustable planing member is secured to the forward planing member

including mechanism for increasing the angle of attack thereof. An outdrive is utilized having a substantially vertical drive shaft connected to a propeller positioned below the rear planing member. The hydroplane system includes a docking arrangement having supporting wheels mounted on extensions extending transversely outwardly on the sides of the craft, the function in combination with a dock having a supporting surface positioned beneath the supporting wheels when the hydroplane is in a planing position and come in contact with the supporting wheels as the hydroplane settles into its settled position. Guide wheels are secured on the extensions adjacent the supporting wheels and engage a guiding surface on the dock to direct the craft into proper alignment with the dock.

3,635,036

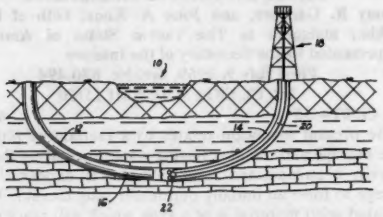
METHOD AND APPARATUS FOR CONNECTING A PIPELINE ACROSS AN OBSTRUCTION

William Coggin Hooper, Jr., Wichita Falls, Tex., assignor to Trunkline Gas Company, Houston, Tex.

Filed Mar. 16, 1970, Ser. No. 19,959

Int. Cl. F16l *1/00*; E02g *3/00*

U.S. Cl. 61—72.1 **14 Claims**



A first well bore is drilled from one side of an obstruction, such as a river. A second well bore is drilled from the other side until it intersects the first well bore. Casing is run into both well bores and connected together at the intersection of the well bores to provide a conduit for connecting the pipeline sections on opposite sides of the obstruction.

3,635,037

PELTIER-EFFECT HEAT PUMP

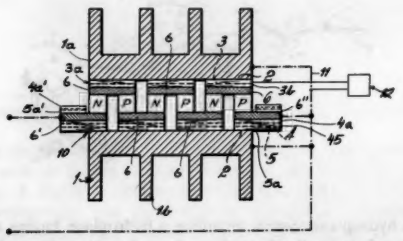
Helmut Hubert, Erda, Germany, assignor to Buderus'sche Eisenwerke, Wetzlar, Germany

Filed Aug. 31, 1970, Ser. No. 68,189

Claims priority, application Germany, Sept. 2, 1969, P 19 44 453.2

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **6 Claims**



A Peltier-effect pile is mounted in a heat exchanger or heat sink with semiconductive barrier layers insulating the Peltier electrodes from the metal of the heat sink. The semiconductive layers are poled electrically or biased to minimize electrical conductivity thereacross but permit maximum heat flow between the Peltier pile and the heat exchange jacket.

3,635,038

JOINT SEPARATION OF ACETYLENE AND ETHYLENE FROM CRACKED GASES

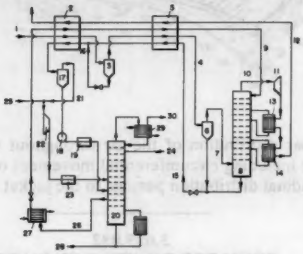
Otto Nagel, Hambach; Rolf Platz, Mannheim; Kurt Taglieber; Kurt Weinfurter, and Dieter Wolf, all of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed May 16, 1969, Ser. No. 825,323

Claims priority, application Germany, May 16, 1968, P 17 68 460.5

Int. Cl. F25j *1/00, 3/00, 3/02*

U.S. Cl. 62—17 **6 Claims**



A gas mixture (obtained by thermal cracking of hydrocarbons followed by quenching of the cracked gas and freed from carbon dioxide and water) is separated into a gas mixture containing hydrogen, carbon monoxide and methane and another gas mixture containing ethylene, acetylene and higher hydrocarbons by (a) cooling the gas mixture which is at superatmospheric pressure in at least one condensation stage to a temperature which is above the solidification temperature of acetylene mixed with the other condensed constituents, (b) separating the condensate thus obtained and subdividing it in a rectifying column into a first mixture containing C_2 hydrocarbons and a second mixture containing C_3 and higher hydrocarbons, and (c) freeing the residual gas remaining from (a) from residual acetylene and ethylene in a scrubber by treatment with some of the mixture consisting of C_3 and higher hydrocarbons from (b).

3,635,039

VAPOR TRAPS

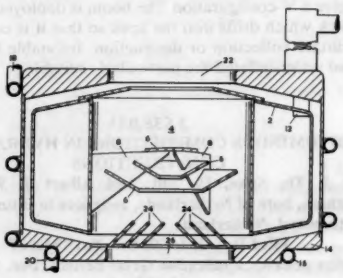
Basil D. Power, Horsham, and Roger D. Oswald, Crawley, both of England, assignors to The British Oxygen Company Limited, Crawley, England

Filed Apr. 27, 1970, Ser. No. 32,452

Claims priority, application Great Britain, Apr. 28, 1969, 21602

Int. Cl. B01d *5/00*

U.S. Cl. 62—55.5 **11 Claims**



In a refrigerated vapor trap for a vapor vacuum pump, the refrigerated trapping surfaces are arranged to be screened

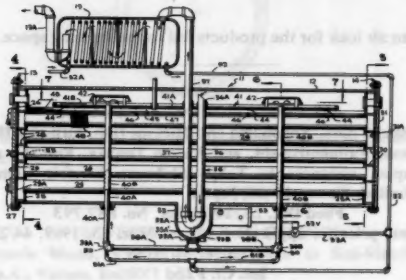
from external heat sources by additional water-cooled surfaces so that should the supply fail of the refrigerating liquid (such as liquid nitrogen) then the trapping surfaces reach a temperature which is still below ambient.

3,635,040

INGREDIENT WATER CHILLER APPARATUS

William F. Morris, Jr., 801 Fayetteville St., Raleigh, N.C.

Filed Mar. 13, 1970, Ser. No. 19,416
Int. Cl. F25b *41/04*
U.S. Cl. 62—219 **8 Claims**



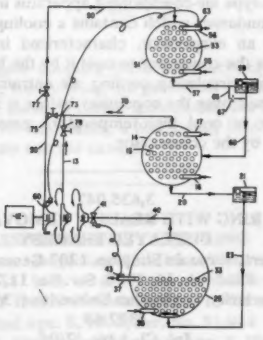
A cooler unit for cooling ingredient water or other liquids, wherein the liquid may be used in processing foods by direct contact with the foods or edible liquids may be cooled. The cooler unit includes a generally cylindrical tank of shell-and-tube construction having an array of 3-inch diameter stainless steel tubes and end chambers partitioned by baffles connecting the tubes in series circuit relation, all surfaces exposed to the ingredient liquid being stainless steel. Liquid refrigerant is supplied to the interior of the shell above the tube array to discharge in droplets over the outer tubes surfaces along their whole length.

3,635,041

HEATING AND COOLING REFRIGERATION APPARATUS

James W. Endress, and Carl M. Anderson, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 13, 1970, Ser. No. 54,175
Int. Cl. F25b *41/00*
U.S. Cl. 62—117 **7 Claims**



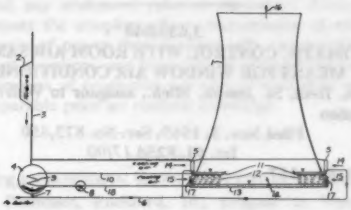
Refrigerant vapor is passed from a stage, other than the last stage, of a multistage compressor to a condenser. Liquid refrigerant is metered from the condenser to an evaporator or cooler. Refrigerant vapor flow from the cooler to the inlet of the compressor is regulated by control means according to the cooling load. The output of the last stage of the compressor is passed to a second separate condenser containing a tube bundle connected to a heating line. The volume of refrigerant flow to the second condenser is regulated in accordance with the heating demand. Liquid refrigerant is metered from the second condenser to the first condenser. With low-cooling demand and high-heating demand, said first condenser serves as a flash economizer to supply refrigerant vapor to the intake of the last stage of the compressor.

3,635,042

METHOD AND APPARATUS FOR WITHDRAWING HEAT FROM INDUSTRIAL PLANTS, ESPECIALLY POWER PLANTS

Kurt Spangemacher, Bochum, Germany, assignor to Maschinenbau-Aktiengesellschaft Balcke, Bochum, Germany

Filed Oct. 29, 1969, Ser. No. 872,161
Claims priority, application Germany, Nov. 2, 1968, P 18 06 656.3
Int. Cl. F28c *1/00*
U.S. Cl. 62—121 **9 Claims**



A method of and apparatus for withdrawing waste heat from industrial plants, especially power plants, preferably for condensing turbine steam, by cooling the steam or water by wet and dry cooling tower means, according to which the waste heat is conveyed to the cooling air of a cooling tower structure having a wet cooling tower component, preferably of annular shape and to a dry cooling tower component above and in close relationship to said dry cooling tower component and preferably likewise of annular shape, the cooling air for said two cooling tower components being respectively supplied thereto separately from each other, whereas the heated up cooling air is withdrawn in common from said two cooling tower components.

3,635,043

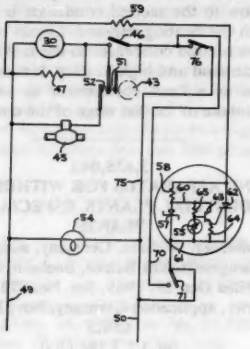
HOUSEHOLD REFRIGERATOR INCLUDING AUTOMATIC ICEMAKER AND DOOR MOUNTED ICE STORAGE RECEPTACLE

John E. Sterling, Louisville, Ky., assignor to General Electric Company

Continuation of application Ser. No. 826,541, May 21, 1969, now abandoned. This application Mar. 16, 1970, Ser. No. 20,077
Int. Cl. F25c *1/10*
U.S. Cl. 62—137 **4 Claims**

A refrigerator comprising a compartment having an access opening, a door for closing the opening, an ice storage receptacle mounted on the door for storing ice pieces and an automatic ice maker supported within the compartment. The ice maker is controlled for periodic operation through a harvesting cycle during which ice pieces are discharged to the receptacle and a fresh charge of water is thereafter supplied to the ice maker. The power supply for the ice maker comprises a

first supply circuit including means for interrupting the power supply when the receptacle is not positioned to receive ice pieces discharged by the icemaker and a second



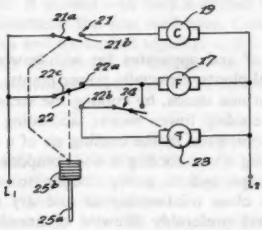
supply circuit for assuring the supply of power to the ice maker in the event that the rod is supply circuit is opened during the water supply portion of the harvesting cycle.

3,635,044

AUTOMATIC CONTROL WITH ROOM AIR SAMPLING MEANS FOR WINDOW AIR CONDITIONER

Gene A. Heth, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed Nov. 3, 1969, Ser. No. 873,450
Int. Cl. F25d *17/00*
U.S. Cl. 62—157 12 Claims



An air conditioner control circuit having a thermostat for automatically causing the air conditioner to be deenergized at predetermined low temperatures and including a timing device causing the room air to be periodically delivered to the thermostat of the air conditioner for providing improved automatic thermostatic control of the air conditioner. The means for bringing the air to the thermostate may comprise an automatic timer for periodically energizing the fan of the air conditioner at temperatures below the predetermined low.

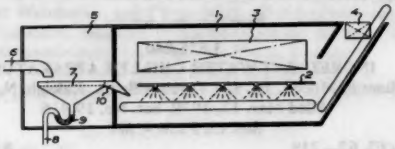
3,635,045

FEED DEVICES

Per Sture Astrom, Halsingborg, Sweden, assignor to Frigoscandia Contracting AB, Halsingborg, Sweden

Filed Feb. 16, 1970, Ser. No. 11,590
Claims priority, application Sweden, Feb. 27, 1969, 2670/69
Int. Cl. F25d *25/00*
U.S. Cl. 62—266 4 Claims

A feed device for products consisting of solid particles serves to feed said products without inclusion of air to a space, in which they are frozen, via a prechamber constituting an air lock for the products fed to the freezing space.

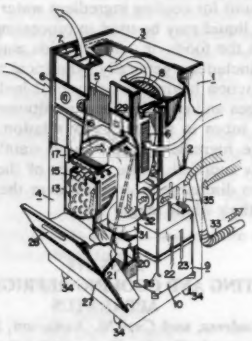


3,635,046

AIR-CONDITIONING APPARATUS

Yoshinari Sato, Yokohama-shi; Hiroshi Itoh, Fuji-shi; Hideki Sano, Fujinomiya-shi, and Masao Tanaka, Fuji-shi, all of Japan, assignors to Tokyo Shibaura Electric Company Limited, Kawasaki-shi, Japan

Filed Dec. 23, 1969, Ser. No. 887,793
Claims priority, application Japan, Mar. 13, 1969, 44/22057; 44/22058; 44/22059
Int. Cl. F28d *5/00*
U.S. Cl. 62—305 7 Claims



A cabinet-type air-conditioning apparatus including a compressor, a condenser which contains a cooling air circulation system and an evaporator, characterized in that water is sprayed onto the condenser to cool it by the heat of evaporation, and the circulating cooling air entraining evaporated water is passed over the condenser before it is discharged to the outdoor to cool high-temperature gaseous refrigerant compressed by the compressor.

3,635,047

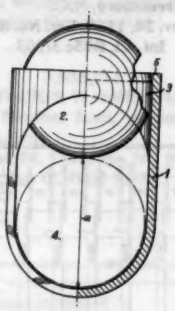
FINGER RING WITH READILY REMOVABLE PIECE DISPLAYED THEREBY

Albert Gilbert, 7, rue du Simplon, 1207 Geneva, Switzerland

Filed Feb. 16, 1970, Ser. No. 11,798
Claims priority, application Switzerland, Mar. 5, 1969, 3307/69
Int. Cl. A44c *17/00*
U.S. Cl. 63—29 4 Claims

The invention concerns a finger ring having a mounting provided with at least one mounted piece or stone. The mounted piece is slidably engaged in a housing of the mount-

ing and located in service position, against an abutment of the housing, by the fringes when the ring is worn. When the



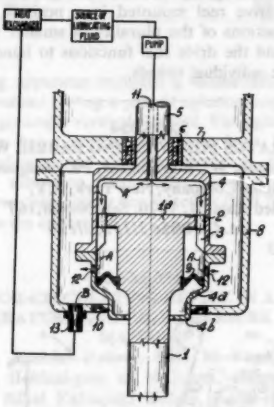
ring is taken off the finger the owner may take the stone out of the housing to replace it by another stone.

3,635,048

UNIVERSAL GEAR COUPLING

Giancarlo Monti, Varese, Italy, assignor to Siai-Marchetti S.p.A., Varese, Italy

Filed Dec. 23, 1969, Ser. No. 887,796
Claims priority, application Italy, Dec. 24, 1968, 25560 A/68
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **3 Claims**



A universal gear coupling including a driving and driven shaft, a housing surrounding the gears and rotatable at least with one of the shafts, a casing surrounding the housing and conduit means for circulating a lubricating fluid through the housing, the gears and the casing.

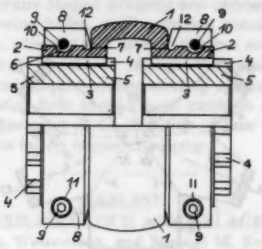
3,635,049

RESILIENT SHAFT COUPLING

Karl Schlotmann, Jaegerweg 13; Heinz-Dieter Bohm, Peukinger Weg 18, both of 475 Unna, and Werner Ruggen, Lessingstrasse 7, 4757 Holzwickede, all of Germany

Filed Apr. 8, 1970, Ser. No. 31,044
Claims priority, application Germany, Apr. 4, 1969, P 19 18 621.1
Int. Cl. F16d *3/18*
U.S. Cl. 64—11 R **10 Claims**

A resilient shaft coupling wherein a pair of hub members is tied together for torque transmission by a flexible coupling member U-shaped in cross section and having generally the configuration of an automotive tire. Each hub member is provided with a torque-transmitting gear in mating engagement with a cooperating torque-transmitting gear on each of a pair of flange portions of the coupling member. The coupling is further provided with additional means for



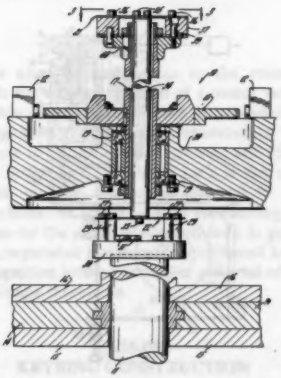
precluding disengagement of the mating torque-transmitting gears, and any undesired relative movement thereof. For these reasons the coupling allows transmission of relatively larger blocks of power than possible with comparable prior art resilient couplings, and transmission of blocks of power at higher numbers of revolution per unit of time than possible with comparable prior art resilient couplings.

3,635,050

DRIVE TRANSMISSION WITH UNIVERSAL COUPLINGS

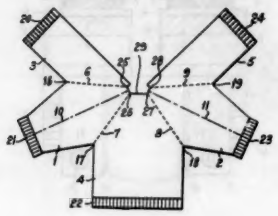
Alan C. Plummer, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed Nov. 25, 1969, Ser. No. 879,658
Int. Cl. F16d *3/78*
U.S. Cl. 64—13 **6 Claims**



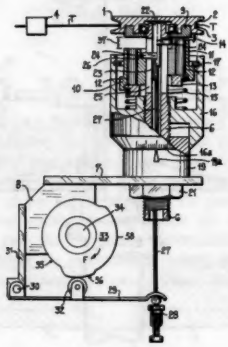
A generator shaft is connected to the toothed wheel of a speed sensor by torsionally rigid but axially deflectable flat coupling plates which enable driving of the wheel in a precisely fixed plane while accommodating misalignment between the wheel and the shaft in all planes.

3,635,051
KNITTING METHOD
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England
Filed Nov. 12, 1968, Ser. No. 774,623
Int. Cl. D04b *1/24*
U.S. Cl. 66—128 1 Claim



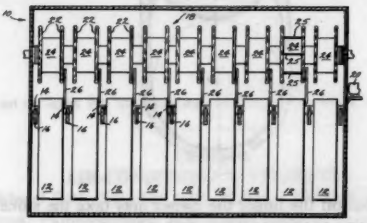
A method of machine knitting a one-piece blank for making up into a garment; sleeve-portions of the blank are joined at their ends to at least one body portion and the joined parts are knitted with the same yarn whereas the parts of the sleeve and body portions which are separated from one another are knitted independently.

3,635,052
DEVICE FOR TENSIONING THE THREAD ON A TEXTILE MACHINE
Michel Monney, Geneva, Switzerland, assignor to Plasmeca, Jean Piemontesi & Cie, Carouge, Switzerland
Filed Apr. 6, 1970, Ser. No. 25,686
Claims priority, application Switzerland, Apr. 19, 1969, 6025/69
Int. Cl. D04b *15/44*
U.S. Cl. 66—146 4 Claims



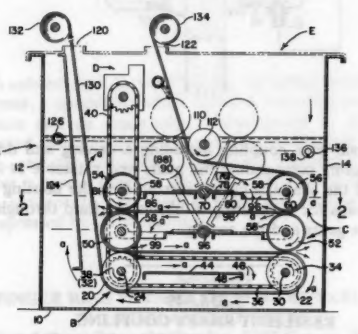
A device for tensioning the thread on a textile machine, which comprises a retaining pulley rotatable by a pulled thread, and a brake for braking rotation of the pulley to give a preliminary tension to the thread downstream of the pulley. The brake comprises control means adapted automatically to modify the opposing force exerted on the pulley for modifying the preliminary tension of the thread during specific stages of the process of working the thread on the machine.

3,635,053
SYSTEM FOR CONVERTING LARGE DYE BECKS INTO A PLURALITY OF SMALL DYE BECKS
Winfield C. Daniel, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Nov. 24, 1969, Ser. No. 879,443
Int. Cl. B05c *3/103*
U.S. Cl. 68—4 9 Claims



A conversion system for dye becks provides a plurality of relatively small vessels which can be fitted within a large dye beck when it is desired to convert the large beck into a number of smaller treating vessels which can carry out separate dyeing or treating operations on separate samples. The small vessels are generally in the form of individual dye becks having their own fluid inlets and drains for receiving treating fluids therein. The individual vessels are provided with hanging devices for supporting a series of such vessels within a relatively large dye beck. The large dye beck is provided with a drive reel mounted in a position above the operational positions of the plurality of smaller vessels carried therein, and the drive reel functions to handle yardage samples for the individual vessels.

3,635,054
APPARATUS FOR WASHING FABRIC WEB
Charles H. Amidon, Jr., Warminster, Pa., assignor to Gulf & Western Systems Company, New York, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,167
Int. Cl. B05c *3/152, 3/176*
U.S. Cl. 68—43 15 Claims



An apparatus for processing fabric web or like materials in a liquid wherein a pair of elongated rolls are generally horizontally mounted parallel to each other for rotation in a liquid holding tank below a selected liquid level. Both of the rolls in the pair are rotated in the same direction by outside drive means. One or more pressure rolls are also rotatably mounted below the liquid level parallel to the pair of rolls

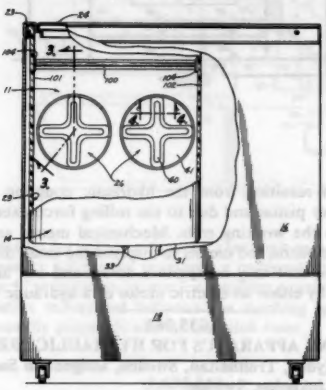
and biased into rolling engagement with one of the rolls in the pair. The biased mounting of each pressure roll comprises pivotal mounting and provides means whereby the pressure rolls may arcuately move from the engaged position to a position spaced therefrom in order to facilitate ease of fabric web threading into the apparatus.

3,635,055

TWIN AGITATOR WASHING MACHINE

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 18, 1969, Ser. No. 886,118
Int. Cl. D06f *17/08*
U.S. Cl. 68—131 **11 Claims**



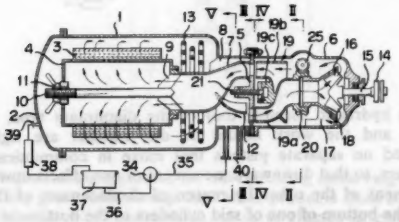
A washing apparatus includes a substantially rectangular washing container having a pair of agitators mounted side by side on one generally vertical sidewall. The agitators are rotatively driven by a motor alternately in a first common direction and a second common direction. A substantially horizontally extending fluid deflector is attached to the sidewall above the agitator for directing fluid from the agitator back into the container.

3,635,056

LIQUOR-CIRCULATING DEVICE IN A HIGH-TEMPERATURE AND HIGH-PRESSURE DYEING MACHINE

Mikio Sato; Yoshiki Hohrai, both of Nagoya, and Kozi Fuziyoshi, Hekikai-gun, all of Japan, assignors to Nihon Senshoku Kikai Kabushiki Kaisha, Kanie-cho, Ama-gun, Aichi Prefecture, Japan

Filed Mar. 10, 1969, Ser. No. 805,649
Claims priority, application Japan, Apr. 4, 1968, 43/22343
Int. Cl. B05c *8/02*
U.S. Cl. 68—189 **6 Claims**



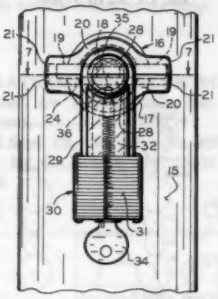
A liquor-circulating device in a high-temperature and high-pressure dyeing machine is disclosed, which comprises a pump casing, a pressured vat connected to said casing, a perforated cylindrical support provided within said vat and having fabrics to be treated wound around its outer periphery, a fixed partition mounted between said pump casing and said pressured vat and having a pair of liquor flowing holes communicated respectively with the inside and outside of said cylindrical support, a switching valve provided within said pump casing and having a liquor delivery section and a liquor suction section, each of said sections including a liquor-communicating aperture shaped similarly and opposed to each of said liquor flowing holes, and a driving member for said switching valve, whereby said driving member may cause said switching valve to rotate to change the relative position between each said liquor-communicating aperture and each said liquor flowing hole in said fixed partition and thus accomplish an adjustment in the direction of flow and the flow rate of the liquor fed by means of a pump.

3,635,057

AUXILIARY LOCK ASSEMBLAGE

Daniel J. Foote, Wauwatosa, and Samuel M. Soref, Milwaukee, both of Wis., assignors to Master Lock Company, Inc.

Filed Aug. 18, 1970, Ser. No. 64,691
Int. Cl. E05b *17/14*
U.S. Cl. 70—424 **10 Claims**



To prevent unauthorized access to the steering-ignition system lock in the steering column of a motor vehicle, or the like, a lockable, sectional enclosure is provided to enclose the steering-ignition system lock. Connected to the sections of the enclosure to permit relative opening and closing movements of the latter in a rectilineal path is the shackle of a padlock which may be locked or released to respectively hold the sections in their closed protecting condition, wherein access to the steering-ignition lock is precluded, or in their open, separated position for authorized key access to said steering-ignition lock or complete removal of the auxiliary lock assemblage therefrom.

3,635,058

KEYRING CONSTRUCTION

Emil S. Polk, 6 North Street, Mount Vernon, N.Y.

Filed May 27, 1970, Ser. No. 40,764
Int. Cl. A44b *15/00*
U.S. Cl. 70—459 **3 Claims**

A keyring construction including a discontinuous annular ring defining an interstice for the selective engagement of keys, a casing element having a pair of openings therein through which said ring passes, and resilient locking means disposed within said casing element projectable into said interstice, to prevent movement of said ring relative to said

casing element, whereby removal of keys is prevented, said resilient means being disengaged by translational movement

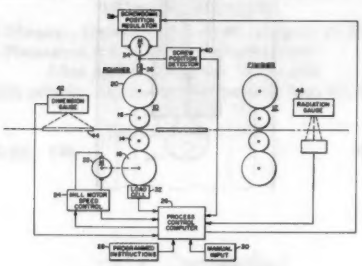
of said ring relative to said casing element, followed by rotational movement thereof.

3,635,059

CALIBRATION OF ROLLING MILL SCREWDOWN POSITION REGULATOR

Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1969, Ser. No. 859,084
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 **12 Claims**



The screwdown position regulator of a rolling mill stand is usually calibrated in relation to a measured loaded roll opening or product thickness. Certain rolling mill arrangements, such as a two-stand reversing plate mill, include a length gage rather than a thickness gage at the stand, so some other method of maintaining screwdown calibration is required. The length measurements along with screwdown position and roll force measurements from two selected passes can be used in a constant volume relationship to determine the calibration of the screwdown system.

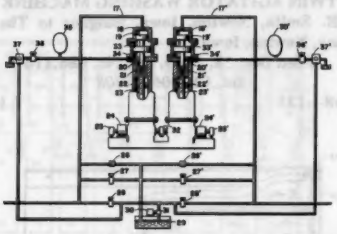
3,635,060

THRUSTING ARRANGEMENT FOR A ROLLING MILL

Akira Hozoji, Saeki-gun, and Toshiharu Takatsu, Hiroshima, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 2, 1969, Ser. No. 854,617
Claims priority, application Japan, Sept. 3, 1968, 43/62735
Int. Cl. B21b *37/08*
U.S. Cl. 72—20 **4 Claims**

A thrusting arrangement for a rolling mill which has a large diameter hydraulic piston maintaining pressure on the working rolls to maintain the roll gap includes a hydraulic device hydraulically coupled to the large diameter piston and including relatively small diameter piston means displaceable in cylinder means and connected to piston rod means. The arrangement includes means operable to apply, to the small diameter piston means, a back pressure opposing the pressure thereon resulting from the hydraulic coupling to the large diameter piston and due to the rolling force exerted by the work on the working rolls. Mechanical means are connected to the piston rod means to displace the small diameter piston means, and may comprise a screw and nut arrangement driven by either an electric motor or a hydraulic motor.

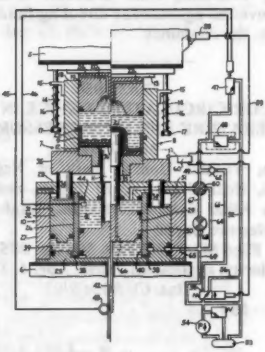


3,635,061

FORMING APPARATUS FOR HYDRAULIC PRESS

Nils Folke Rydell, Trollhattan, Sweden, assignor to Saab Aktiebolag, Linkoping, Sweden

Filed Dec. 5, 1969, Ser. No. 882,652
Claims priority, application Sweden, Dec. 9, 1968, 16777/68
Int. Cl. B21d *22/12*
U.S. Cl. 72—63 **11 Claims**



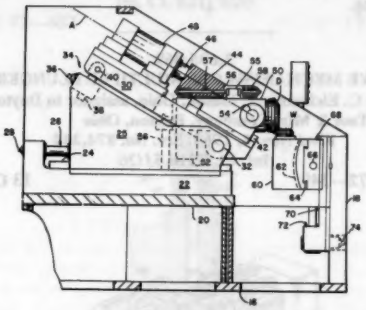
In a hydraulic forming tool of the diaphragm type, the punch and the work holder or die member are rigidly mounted on separate pistons that move in communicated cylinders, so that downward movement of one effects upward movement of the other by reason of displacement of fluid from the bottom of one of said cylinders to the bottom of the other. Adequate forming force is assured by metering outflow of fluid from the upper portion of the cylinder having the upgoing piston.

3,635,062

MACHINE FOR ROLLING TAPERED GEARS

Benjamin F. Bregi, and Richard W. Tersch, both of Grosse Pointe Shores, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 13, 1970, Ser. No. 36,932
Int. Cl. B21h 5/04
U.S. Cl. 72—102 9 Claims



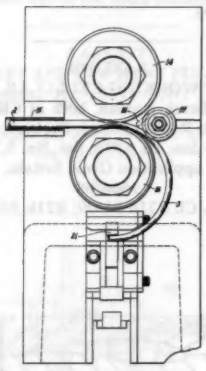
Apparatus for rolling a tapered gear such as a bevel or hypoid gear by rolling the gear with a conjugate tapered gear. The machine includes means for applying pressure by effecting relative movement between the meshing gears along a line generally perpendicular to the pitch cone.

3,635,063

MANUFACTURE OF RING GEAR AND OTHER RING BLANKS

Lionel Stern, Kew, and Bernard Milton Hadaway, Highett, both of Australia, assignors to A. T. Richardson & Sons Proprietary Limited, Melbourne, Victoria, Australia

Filed Sept. 12, 1969, Ser. No. 857,332
Claims priority, application Australia, Sept. 26, 1968, 43,915/68
Int. Cl. B21f 11/00; B23p 13/00
U.S. Cl. 72—130 11 Claims



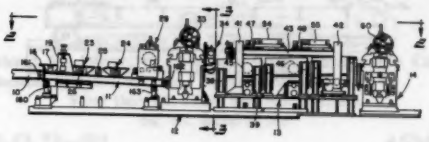
Method of an apparatus for cold pressing metal ring blanks for ring gears, piston rings and other products from stock of circular form in cross section, so as to change its cross-sectional shape into substantially barrellike formation and to also form the stock into a ring, subsequently subjecting the ring blank to a second cold pressing operation in a circular chamber of channel or rectangular shape in cross section, whereby molecular flow of the metal is facilitated until it has passed its yield point without the pressed blank filling said chamber.

3,635,064

PIPE MILL

William J. H. Chang, Rocky River, Ohio, assignor to The Yoder Company, Cleveland, Ohio

Filed Nov. 10, 1969, Ser. No. 875,251
Int. Cl. B21d 5/08
U.S. Cl. 72—178 13 Claims



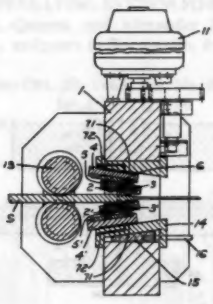
A pipe or tube mill of the cage-type having improvements in the breakdown, preforming and edge forming of the strip reducing the cost of tooling and enhancing the convertibility of the mill to produce tubes or pipe of different sizes and yet which can readily handle heavy gauge strip.

3,635,065

BACKING-PLATE-DRIVEN CYCLIC ROLLING MILL

Tadeusz Sendzimir, c/o T. Sendzimir, Inc. P.O. Box 1350, Waterbury, Conn.

Filed Sept. 18, 1969, Ser. No. 859,154
Int. Cl. B21b 13/18, 35/00
U.S. Cl. 72—214 10 Claims



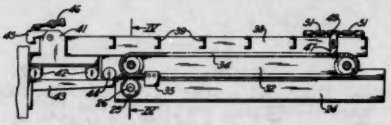
A cyclic operating rolling mill wherein one or more working ro'ls of small diameter, operating on one or both sides of the workpiece, are disposed between the workpiece and rigid housing beams, and are reciprocated along an inclined path by means of a drive plate to produce the reduction. The drive plate drives the work rolls by frictional contact along the same generator which transmits the roll-separating force to said rigidthousing beams. The workpiece is independently fed into the mill, and means are provided to obviate a scalloped condition of the finished workpiece. With a plurality of work rolls a rotation thereof of less than 180° creates an overlap in the rolling paths of the work rolls so that the portions of the work rolls which never contact the driving plate may be given a desired configuration other than cylindrical.

3,635,066

ROLL ASSEMBLY EXTRACTOR FOR A ROLLING MILL

Winfried F. Schmiedberg, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.

Filed Nov. 13, 1969, Ser. No. 876,418
Claims priority, application Great Britain, Nov. 25, 1968, 55,767/68
Int. Cl. B21b 31/10
U.S. Cl. 72—239 7 Claims



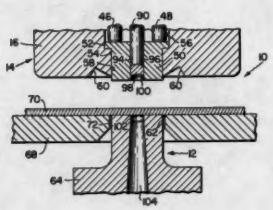
The present disclosure relates to a roll assembly extractor for a rolling mill which includes three superimposed rams, the upper one being supported by a middle one and caused to move relative to the roll assembly and the middle ram supported by a lower ram and movable relative thereto towards the roll assembly. The upper ram includes a hook for connecting the ram to the roll assembly. The middle arm is advanced by a rack and pinion and carries a chain which is connected to the upper ram for advancing this ram.

3,635,067

APPARATUS AND METHOD FOR FINE BLANKING OF PARTS

Walter E. Hanas, Roslyn, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 24, 1969, Ser. No. 860,761
Int. Cl. B21d 31/02, 28/00, 7/06
U.S. Cl. 72—329 13 Claims



A fine-blanking die for mounting on a conventional punch press actuating device to punch out characterized shaped precisely finished parts e.g., gear blanks and gear blank segments from a sheet or strip material, so that these parts will have machine-finished edges and be of uniform thickness by providing an annular recessed wall surface in a portion of the die that is immediately adjacent and which extend outwardly of its cutting edge so that the scrapped metal in the sheet that surrounds the part being punched out can flow outwardly into the recessed portion of the die and thereby eliminate the undesired fractures rounded edges, burrs and other irregularly shaped surfaces that have heretofore been experienced from being formed in the outer periphery of the punched out part.

3,635,068

HOT FORMING OF TITANIUM AND TITANIUM ALLOYS

Thomas Watmough, Dolton, and John A. Schey, Hinsdale, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed May 7, 1969, Ser. No. 822,453
Int. Cl. B21j 1/06
U.S. Cl. 72—342 11 Claims

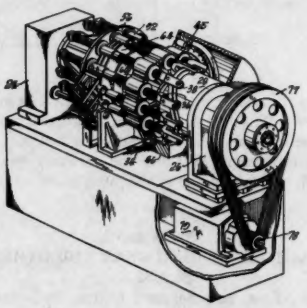
A method for bulk deformation of titanium and titanium alloys employing elevated temperatures for the billet and the dies. The method permits single step forging from a billet or preform to a final shape without the necessity of further machining.

3,635,069

DRIVE MECHANISM FOR MULTIPLE PLUNGERS

Franklin C. Eickenhorst, Mason, Ohio, assignor to Dayton Reliable Tool & Mfg. Company, Dayton, Ohio

Filed Nov. 5, 1969, Ser. No. 874,242
Int. Cl. B21d 51/26
U.S. Cl. 72—349 13 Claims



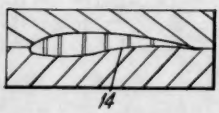
A massive power-driven rotary structure has a plurality of circumferentially spaced pairs of dies to process a corresponding plurality of workpieces on each of its revolutions. One die of each pair is mounted on a longitudinally extending plunger and all of the plungers are reciprocated in sequence by a fixed circumferential cam track adjacent one end of the structure.

3,635,070

METHOD OF WORKING CELLULAR MATERIAL

John Hoyle, and Derek Aspden, both of Clitheroe, England, assignors to Rolls Royce Limited, Derby, England

Filed Jan. 16, 1970, Ser. No. 3,343
Claims priority, application Great Britain, Feb. 22, 1969, 9666/69
Int. Cl. B21d 31/00; B21k 3/04
U.S. Cl. 72—376 2 Claims



A blade for a gas turbine engine has its core made from a honeycomb structure which is shaped externally to suit the internal blade profile. The honeycomb portion is cut to the developed shape of the blade internal profile and then its edges are bent so as to facilitate crushing to final shape, the

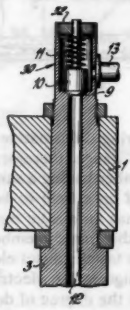
prebending enabling the honeycomb to be crushed without blocking of the honeycomb pockets with crushed material.

3,635,071

DRAIN VALVE FOR A HYDRAULIC SHOCK ABSORBER

Albert Hertl, Duisburg, Germany, assignor to Hydraulik G.m.b.H., Duisburg, Germany

Filed July 8, 1969, Ser. No. 839,814
Claims priority, application Germany, Sept. 21, 1968, P 17 77 196.9
Int. Cl. B21j 9/20
U.S. Cl. 72—453 7 Claims



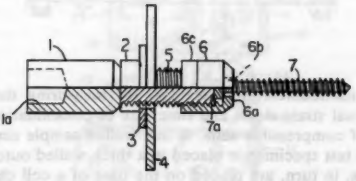
A drain valve for a hydraulic shock absorber particularly for use on a large hydraulic press, includes a drain passage carried on a plunger member which is moved downwardly with the movable machine element such as a guide plunger of a press crosshead. The passage defines a valve seat which is closed by a valve disc of relatively great mass under the action of a preset biasing spring. The mass of the valve disc is such that, during a shock movement of the crosshead and the supporting plunger therefor causing a fast movement of the plunger, the seat will move away from the valve disc mass because of the large mass movement of inertia of the disc, and permit flow through the drain valve passage. The plunger will gradually absorb the shock as the fluid in its associated cylinder is displaced out of the drain passage.

3,635,072

SHAFT AND CUP DENT PULLER

Eugene B. Steinmann, Jr., 13110 N.W. 19th Ave., Miami, Fla.

Filed Oct. 28, 1969, Ser. No. 870,048
Int. Cl. B21d 1/12
U.S. Cl. 72—457 7 Claims



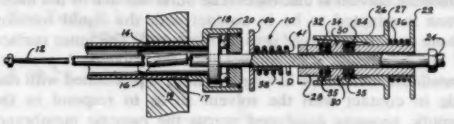
A power-driven dent puller device for the repair of dented sheet metal is described. The device comprises a screw-threaded shaft assembly having a removable self-tapping screw at one end and a drive socket at the other end adapted for driving interconnection with an ordinary air wrench drive mechanism. Cooperative with the screw-threaded shaft assembly is a cylindrical abutment member having an apertured wall at one end for substantially coaxially receiving the screw-threaded shaft assembly and against which a loosely retained washer circumjacent an inner end portion of the screw-threaded shaft assembly abuts in the use of the device. In use, the self-tapping screw is power driven in self-tapping relation through an opening punched in the dented area to be repaired, whereupon the outer end of the cylindrical abutment member will be moved into abutting engagement with the sheet metal being repaired in surrounding relation with respect to the punched opening to pull the dented sheet metal outwardly in the direction of the abutment member.

3,635,073

MECHANICAL TUBE EXPANDER

Richard M. Oliver, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1969, Ser. No. 888,785
Int. Cl. B21d 41/02
U.S. Cl. 72—393 4 Claims



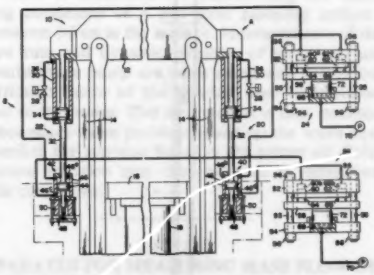
A mechanical tube expander including a cage having rollers mounted therein and a tapered mandrel to coact therewith for expanding the tube. A locking member permits movement of the mandrel a predetermined distance after the rollers make initial contact with the inner surface of the tube, thereby causing a predetermined expansion of the tube.

3,635,074

COMPENSATING SYSTEM FOR PRESSES

Alois J. Moos, Queens, and Alexander Zeitlin, Weschester, both of N.Y., assignors to Barogenics, Inc., Pelham Manor, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,808
Int. Cl. B21j 9/20
U.S. Cl. 72—453 2 Claims



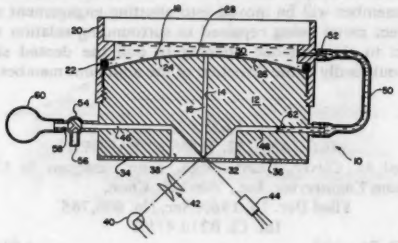
Apparatus for compensating for eccentric loads in forging presses and the like. The apparatus includes a plurality of hydraulic cylinders positioned about the press and connected between the platens. The cylinders are interconnected through a hydraulic integrating device so that if there are eccentric forces acting on the platens the forces within the hydraulic cylinders are automatically shifted to counteract the eccentric forces.

3,635,075

OSMOMETER

Paul T. Gilbert, Los Altos Hills, Calif., assignor to Beckman Instruments, Inc.

Filed June 29, 1970, Ser. No. 50,460
Int. Cl. G01n 11/00
U.S. Cl. 73—64.3 11 Claims



An osmometer of the type having an osmotic membrane rigidly fitted to a cell having an inner space filled with a reference solvent is disclosed. The outer surface of the membrane is adapted to be in contact with the liquid solution whose osmotic pressure is to be measured. The inner surface of the membrane is in contact with the solvent. A pressure transducer membrane having two sides is positioned with one side in contact with the solvent so as to respond to the osmotic pressure developed across the osmotic membrane. Means are provided for transmitting to each side of the transducer membrane any change of mechanical and hydraulic pressure that may occur at the osmotic membrane whereby the transducer membrane responds only to the osmotic pressure. In one embodiment means are also provided for balancing the osmotic pressure with a hydraulic pressure.

3,635,076

STRAIN-SENSING DEVICE

Ivor Selwyn Sacks, Chevy Chase, Md., and Dale Evertson, Austin, Tex., assignors to Carnegie Institution of Washington

Filed July 29, 1969, Ser. No. 845,790
Int. Cl. G01b 7/16; G01n 3/00
U.S. Cl. 73—88.5 9 Claims

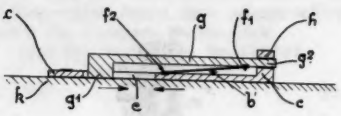
A device for detecting deformation in solids having a housing insertable in the solid and a closed container in the housing. A strain-sensing device communicates with the interior of the housing and liquid filling the housing couples the walls thereof to the sensing device. Expandable cement couples the walls of the housing to the surrounding solid to transmit deformations therebetween.

3,635,077

METHOD FOR MEASURING DEFORMATION AND GAUGE THEREFOR

Joseph Rauch, 8, impasse Truillot, 94 Ivry-sur-Seine, France

Filed July 30, 1969, Ser. No. 846,084
Claims priority, application France, Aug. 5, 1968, 161849
Int. Cl. G01l 1/22
U.S. Cl. 73—88.5 R 4 Claims



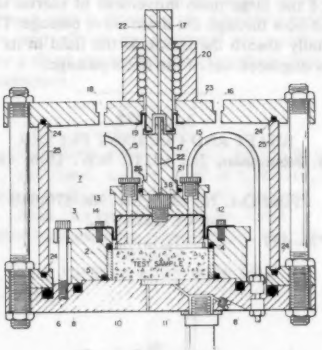
A method of measuring deformation and an electrical resistance extensometer gauge therefor, wherein the gauge comprises a frame member having a surface adapted to be affixed to the surface of an article to be tested, at least one strand of wire which has an elastic memory, and means for affixing the strand to the frame member, whereby deformation of the article to be tested causes elongation of the strand thereby causing a change in the electrical resistance of said strand in proportion to the degree of deformation of the article to be tested.

3,635,078

SOIL CONSOLIDOMETER

Anwar E. Z. Wissa, Marblehead, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 25, 1970, Ser. No. 40,022
Int. Cl. G01n 3/08
U.S. Cl. 73—89 5 Claims



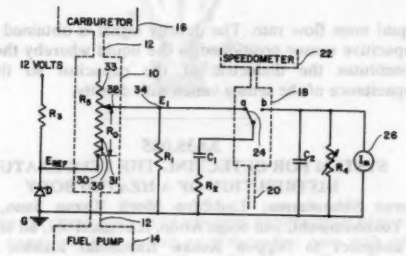
A consolidometer and method for measuring the one-dimensional stress-strain and time rate of consolidation properties of compressible soils. A thin-walled sample ring containing a test specimen is placed in a thick-walled outer ring. The rings, in turn, are placed on the base of a cell chamber thereby forming a test chamber. A piston head containing a coarse porous stone is placed against the top of the sample and a diaphragm between the piston head and test chamber isolates the specimen from the cell chamber. The test specimen can be loaded axially by applying pressure to the cell chamber and/or externally through a piston shaft which

is placed against the piston head and extends through an aperture in the top plate of the cell chamber. The one-dimensional stress-strain and time rate of consolidation properties of the specimen can be determined from measurements as a function of time of the applied stress and the excess pore water pressures developed within the test specimen when it is deformed at a constant rate of strain while it is kept saturated under a water back pressure applied through the coarse stone in the piston head. The consolidometer is also to be used to measure the residual pore water pressure of the test specimen prior to loading, and its swell pressure during saturation at constant volume.

3,635,079
MILES PER GALLON METER

Norvin P. Tomlinson, 3162 Sherbrook Drive, Uniontown, Ohio

Filed Feb. 25, 1970, Ser. No. 14,013
Int. Cl. G01m *15/00*
U.S. Cl. 73—114 **6 Claims**

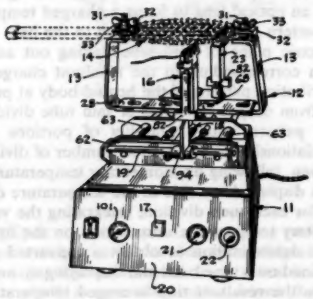


This invention relates to an indicating instrument assembly for installation on a vehicle to provide engine performance data to an operator in terms of miles traveled per gallon of fuel utilized. A unique electrical circuit cooperates with means to indicate fuel flow and means to indicate vehicle speed to instantaneously compute and display a miles per gallon information.

3,635,080
RACKET-STRINGING MACHINE WITH AUTOMATIC LOCKING

Harvey R. Krueger, Carpentersville, and Dean R. Armentrout, Park Ridge, both of Ill., assignors to Court and Slope, Inc.

Filed May 31, 1968, Ser. No. 733,601
Int. Cl. G01l *5/00, 7/00*
U.S. Cl. 73—145 **19 Claims**

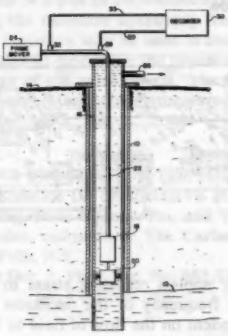


A turntable having an upright U-shaped yoke, provided with clamps for holding a horizontally disposed racket frame at its top, is automatically locked during successive power-actuated pulls of the string in stringing. The string is pulled by a hydraulic cylinder to accurate tension determined by the hydraulic pressure for which there is an adjustable relief valve and gauge. The piston of the cylinder operates a pull bar along which the pulling clamp may be shifted laterally so as to pull in the most advantageous direction. The cylinder is slightly shiftable. The return stroke of the pull bar is limited before the piston seats. Reaction to the retracting pressure releases a spring-set brake to make the yoke free to turn; and reaction to the pulling pressure reinforces the braking force of the spring. A holding clamp can be manually shifted to an advantageous position within the frame when fully released, and the manual closing stroke on its operating lever first raises it to string height, then completes the clamp closing operation and locks the clamp to the turntable, so that it swings with the racket between successive pulls. The parts are so positioned and dimensioned that a racket frame may be strung in both directions without releasing it from the swingable yoke.

3,635,081
DIAGNOSTIC METHOD FOR SUBSURFACE HYDRAULIC PUMPING SYSTEMS

Sam G. Gibbs, Midland, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,797
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 **4 Claims**



A method is described for determining the downhole operating conditions of a hydraulic pumping system from measurements taken at the surface. Measurements of the surface flow rate and dynamic pressure of power oil used to drive a subsurface pump are made along with determinations of the friction factor of the conduit used to transport the power oil to the pump. This information is then combined to form a boundary valve problem based on the wave equation that describes the acoustic waves in the power oil. Solutions to the wave equation may then be used to determine the downhole conditions.

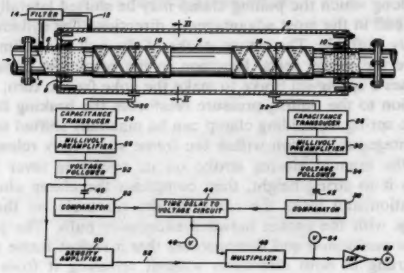
3,635,082
APPARATUS FOR MEASURING MASS FLOW OF FLUIDBORNE SOLIDS

Samuel B. Prellwitz, Pittsburgh, and Joseph Pysnik, Monroeville, both of Pa., assignors to United States Steel Corporation

Filed Apr. 23, 1969, Ser. No. 818,527
Int. Cl. G01g *11/06*
U.S. Cl. 73—194 M **8 Claims**

Finely divided particles in a fluid stream transported in a conduit comprise the dielectric of two spaced-apart capacitors at electrically insulated inserts in the conduit. Circuitry

determines the time span between correlated variations in capacitance of the two capacitors as a measure of stream velocity. Additional circuitry determines stream density by



measuring the capacitance. The velocity and density circuit outputs are multiplied to provide a mass flow rate. An integrator provides total flow.

3,635,083

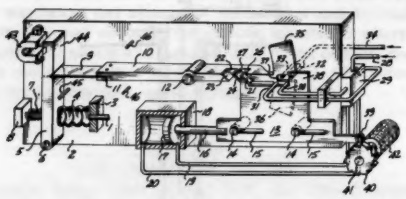
FLUID PRESSURE TIME INTEGRATOR

Thomas R. Vaughn, 2333 South Patton St., San Pedro, Calif.

Filed Sept. 26, 1969, Ser. No. 861,348

Int. Cl. G01f *1/02*; G06c *27/00*

U.S. Cl. 73—206 **9 Claims**



A controller applies restoring stress to an oscillator for regulating the frequency of the oscillator in response to a pressure dependent on the flow of fluid to be measured such that the oscillator frequency is proportional to flow rate. The oscillator is connected to drive an indicator actuator. The pressure-responsive controller includes a lever subject to a force produced by the pressure dependent on the fluid flow and such lever tensions a tie connected to a lever of the oscillator. Tensioning the tie urges the oscillating arm towards its centered position. A governor for the oscillating arm has interfering means including a slide carrying ramp surfaces cooperating with ramp surfaces carried by the oscillating arm. The slide is driven to reciprocate lengthwise of the arm. The slide and arm carry valve leaves cooperatively controlling flow of fluid to energize slide-reciprocating mechanism for effecting coaction of the slide and arm ramp surfaces to retard or accelerate movement of the oscillating arm through the central portion of its stroke to prevent overtravel and to sustain oscillation of the arm.

3,635,084

MASS FUEL FLOW MEASUREMENT SYSTEM

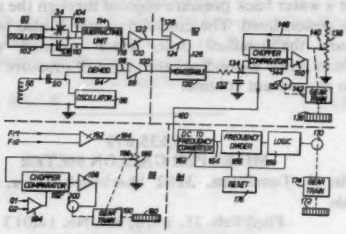
David A. Lamphere, Chittenden, and Douglas E. Stuart, Middlebury, both of Vt., assignors to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,757

Int. Cl. F16g *1/00*

U.S. Cl. 73—231 M **6 Claims**

The system measures the mass flow rate of a liquid. It comprises a turbine impeller located in the flow stream which rotates at a rate proportional to the volume flow rate of the liquid and produces a corresponding electrical signal. This electrical signal is electrically multiplied with a further signal proportional to the liquid density so as to give the required



liquid mass flow rate. The density signal is obtained from a capacitive sensor positioned in the liquid whereby the liquid constitutes the dielectric of the capacitor so that the capacitance of the sensor varies with density.

3,635,085

SYSTEM FOR DETECTING THE TEMPERATURE DISTRIBUTION OF A HEATED BODY

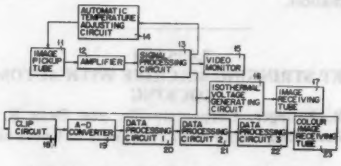
Teruo Shimotsuma; Toshihiro Mori; Kazuo Sano, all of Yokohama-shi, and Seigo Ando, Kawasaki-shi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,264

Claims priority, application Japan, June 15, 1968, 43/41010

Int. Cl. G01d *5/40*; G01j *5/32*

U.S. Cl. 73—340 **5 Claims**



A system for detecting the temperature distribution of a heated body which consists in receiving heat rays radiated from predetermined parts of heated body by an image pickup tube through an optical lens to focus a charged temperature distribution pattern image corresponding to the heat rays on the photoelectric plane of said tube, taking out an image signal pattern corresponding to the resultant charged temperature distribution pattern of the heated body at predetermined parts from output terminals of said tube dividing the image signal pattern into a plurality of portions in corresponding relationship to the desired number of divisions of an image screen, following up momentary temperature information as the displayed variable in the temperature distribution pattern for each such division, integrating the values of these momentary temperature information on the basis of a given time of determination to obtain a converted average value determined on a time basis and displaying on an image-receiving tube the resultant time-averaged temperature distribution pattern images corresponding to the temperature distribution pattern of the heated body at the predetermined parts.

3,635,086

TEMPERATURE MEASURING AND INDICATING DEVICE

Andrew J. Beruck, 615 Pear St., Dover, Del.

Filed Nov. 13, 1969, Ser. No. 876,473
Int. Cl. G01k 1/14
U.S. Cl. 73—343 R 3 Claims

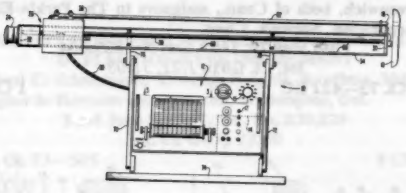
Device for measuring and indicating temperature of liquid stream comprises thin-walled nonconductive case with inlet and outlet openings at opposite ends of case. Temperature-sensing unit inside case is immediately adjacent outlet opening thereof. Line connects sensing unit to temperature scale and indicating pointer assembly on exterior of case. Imperforate baffle plate inside case immediately adjacent inlet opening thereof disperses and mixes incoming liquid.

3,635,087

APPARATUS FOR RECORDING A TEMPERATURE PROFILE

Charles E. Conklin, Pleasant Valley, N.Y., assignor to Conklin Instrument Corp., Pleasant Valley, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,640
Int. Cl. G01k 3/06
U.S. Cl. 73—343.5 10 Claims



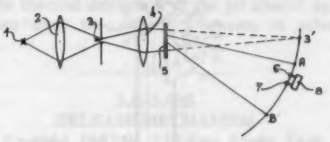
A highly accurate temperature-profiling package assembly includes a strip chart recorder and refrigerated ice water reference junction connected to a movable thermocouple junction which is reversibly motor driven through a disengageable screw and nut transmission, and position indicating buttons which control a switch for actuating a marking relay in the recorder which has a floating marking pen.

3,635,088

MEASURE OF THE TEMPERATURE OF HOT ENERGY-RADIATING BODIES

Pierre Poncet, 12 bis, Rue Trarieux, Lyon (Rhone), France

Filed Sept. 23, 1969, Ser. No. 860,279
Int. Cl. G01j 5/54, 5/60
U.S. Cl. 73—355 R 4 Claims



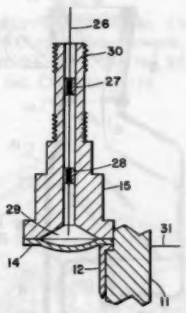
Apparatus for determining the wavelength which corresponds to the maximum of the curve intensity of radiated energy versus wavelength of the emission received from a radiating body. For this purpose photosensible means detect a difference in the intensities of the energy received at two points disposed close to each other along the length of a spectrum of the emission of the body and these two points are displaced relatively to the length of the spectrum until this difference disappears. The maximum is then situated about midway between the points. The photosensible means may be in the form of a pair of photoelectric cells or of a single cell receiving the radiation alternately from one and the other point. The invention may be used in association with a standardized emitter to determine the importance of absorption phenomena or of the more or less "black" character of the body whose temperature is being measured.

3,635,089

APPARATUS AND PROCESS FOR THE MEASUREMENT OF THE PRESSURE OF CORROSIVE MATERIAL

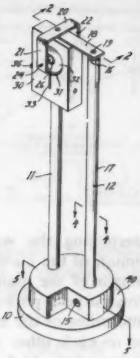
William R. Harding, State College, Pa., and Vincent G. Hill, Kingston, Jamaica, assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,527
Int. Cl. G01l 7/08
U.S. Cl. 73—395 3 Claims



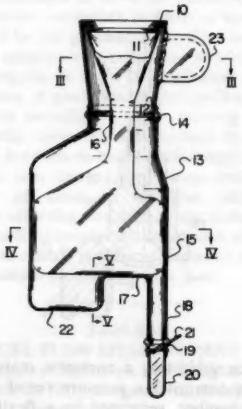
Apparatus for subjecting a corrosive material to a controlled pressure comprises a pressure vessel and a pressure measurement chamber, separated by a flexible diaphragm, which keeps the corrosive material within the pressure vessel, yet allows pressure to be transmitted to the pressure measurement chamber for measurement. Two methods of maintaining the flexible diaphragm in a pressure-transmissive position are described.

3,635,090
PRESSURE TRANSDUCER
William D. MacGeorge, Doylestown, Pa., assignor to Testing Technology Corporation, Langhorne, Pa.
Filed Dec. 8, 1969, Ser. No. 883,174
Int. Cl. G01l 9/10
U.S. Cl. 73—398 R **6 Claims**



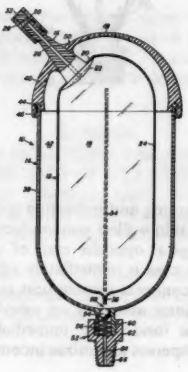
A pressure transducer is provided suitable for high-pressure fluids which includes a relatively straight tube to which pressure is supplied internally, the tube being of unsymmetrical cross section and reduced in size along one side thereof for deflection upon increase of pressure applied therein, a linear variable differential transformer preferably being provided for takeoff of displacement in response to pressure change.

3,635,091
MIDSTREAM URINE SPECIMEN AND FRACTIONAL FLUID COLLECTORS
Frederick D. Linzer, 1373 Foxwood Drive, and Harold M. Price, 112 Moonlight Drive, both of Monroeville, Pa.
Filed Aug. 31, 1970, Ser. No. 68,434
Int. Cl. G01n 1/10
U.S. Cl. 73—421 R **18 Claims**



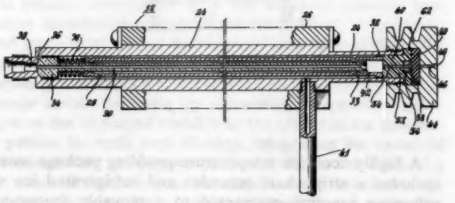
A disposable urine specimen and fractional liquid collector having an inlet member with an inner connector and an outer connector, and a preferably flexible outer enclosure having a neck portion connected to the outer connector. A flexible inner bag is contained in the outer enclosure, and has a neck portion connected to the inner connector. The inner bag disconnects from the inner connector after the inner bag contains a given quantity of liquid, to thereafter trap the liquid in the inner bag, and to thereafter allow the outer enclosure to receive liquid through the inlet member. The outer enclosure and/or inner bag may be adapted so at least some liquid collected therein can be deposited in independent sterile containers.

3,635,092
MANUALLY OPERATED GAS SAMPLER
Ralph E. Maughan, Arvada, and Fred C. Ryan, Golden, both of Colo., assignors to The United States of America as represented by the Secretary of the Interior
Filed Nov. 12, 1969, Ser. No. 875,654
Int. Cl. G01n 1/24
U.S. Cl. 73—421.5 R **10 Claims**



A pliant sample container housed within a resilient pump is filled with gas by manually compressing and releasing the pump.

3,635,093
SAMPLE INJECTION ARRANGEMENT FOR AN ANALYTICAL INSTRUMENT
Horace Dean Downs, North Haven, and John E. Purcell, Old Greenwich, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed May 29, 1969, Ser. No. 829,004
Int. Cl. G01n 1/22, 31/08
U.S. Cl. 73—422 GC **1 Claim**



A sample injector arrangement for an analytical instrument includes a septum body which is shielded from the environment of a sample injection chamber by a shielding means

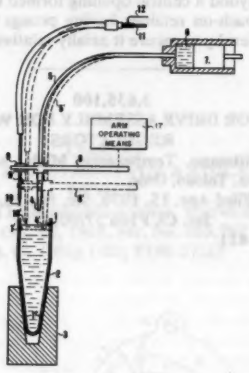
positioned between the septum and the chamber and having a channel extending therethrough along its length between the septum at one end and a gas flow path at an opposite end. The channel is adapted for receiving a sample injection probe and provides a means of minimizing the surface area of the septum which is exposed to the sample chamber. An injector arrangement adapted for further reducing ghost peaks includes a plurality of channel members adapted for extending the diffusion path between dead volume and the injector and the septum.

3,635,094

AUTOMATIC TRANSFER PIPETTE MEANS

Rudolf Oberli, Langenthal, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland

Filed Aug. 27, 1970, Ser. No. 67,400
Claims priority, application Switzerland, Sept. 6, 1969, 13478/69
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 A **10 Claims**



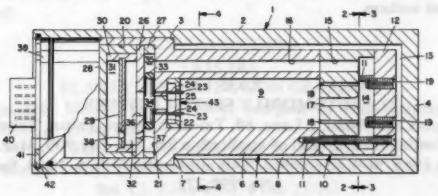
Automatic transfer pipette means for withdrawing a given quantity of a liquid specimen from an open-topped container, characterized by the provision of means for automatically submerging a downwardly depending pipette a given distance beneath the level of the liquid. The pipette is displaced vertically relative to the container by an operating arm that also carries liquid level sensing means which are operable to position the arm a given distance above the liquid level, thereby submerging the pipette to the desired depth.

3,635,095

GRAVITY-COMPENSATING MEANS FOR FLUID JET DEFLECTION-TYPE INSTRUMENT

Wilfred C. Schuemann, Rawlings Heights, Rawlings, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 5, 1969, Ser. No. 830,829
Int. Cl. G01p *15/00*
U.S. Cl. 73—505 **5 Claims**



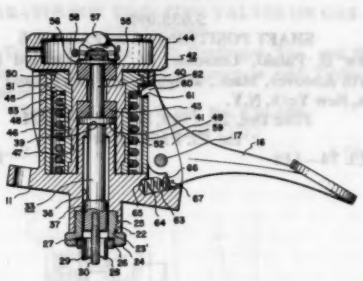
An instrument wherein the deflection of a fluid jet, induced for example by the angular movement of the instrument, produces a signal proportional to the deflection, and particularly means in such an instrument for compensating for unequal deflection of the jet in the different angular positions of the jet about its longitudinal axis, which deflection is induced by local conditions at the sensing means such as convection currents caused by the heating of the jet fluid by the sensing means; the compensating means comprising a flow constrictor located concentrically of the jet downstream from the sensing means and acting to align the fluid flow axially relative to the unit as it passes over the sensing means whereby the thermal deflection of the jet caused by heating as it passes over the sensing elements is substantially eliminated.

3,635,096

RELEASE MECHANISM

Edward C. Caufield, 9682 So. 258 East, Sandy, Utah

Filed July 8, 1970, Ser. No. 53,180
Int. Cl. G05g *17/00*
U.S. Cl. 74—2 **11 Claims**



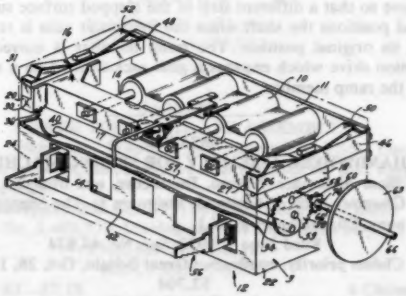
A pull-cable-type of release mechanism incorporating a latch and a spring release, whereby the actuating pressure applied to the mechanism can be multiplied many times in terms of thrust or pull directed to a release cable. The release mechanism includes many safety features including a cocking member lock, safety pin incorporation, and other structural advantages inducing an operator to follow a given procedure to insure that load release will occur when desired.

3,635,097

PUSHBUTTON TUNER WITH SLIDING BLOCK AND RACK

Donald B. Mears, Jr., Thompsonville, Conn., assignor to General Instrument Corporation, Newark, N.J.

Filed Oct. 23, 1970, Ser. No. 83,277
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.33 **18 Claims**



A tuner, capable of pushbutton or manual operation, is provided with structure to inhibit lost motion in both tuning

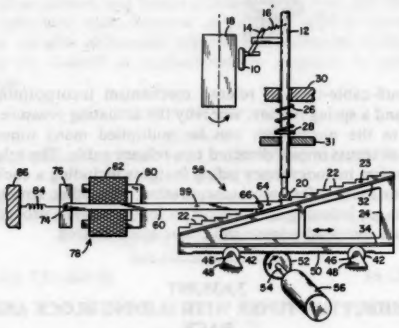
modes. The same structure also serves as guide means which restricts the direction of motion of an adjustable tuning member. A body or chassis, movable in a housing, has a first part connected to the adjustable tuning member and a second part having a rack formed on its undersurface. A guide block, atop and contiguous the second part, is acted upon by a resilient member which urges the rack into constant engagement with an adjacent driving or tuning gear, thereby to minimize lost motion. The first and second parts of the body move as a unit and rotation of the gear is converted into translation of the tuning member. The manual tuning means comprises a shaft rotatably mounted in the housing with a second gear thereon, adjacent and in driving relation to the first gear. The shaft end adjacent the second gear is received in a wedge-shaped opening and has a tapered section which passes through that opening and bears against the walls thereof. A spring active on the other end of the shaft, in conjunction with the opening a tapered shaft section and the tapered opening walls bearing thereagainst, causes the second gear to be urged into constant engagement with the first gear, thereby to minimize backlash at that point.

3,635,098

SHAFT POSITIONING APPARATUS

Andrew B. Pataki, Lansdale, Pa., and Richard F. Perry, North Andover, Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,871
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **11 Claims**



Shaft positioning apparatus including a ramp member in supporting relation to an interposer cam which, by moving from its original position in a direction substantially transverse to the axis of the shaft, lifts the shaft from contact with a step of a shaft-supporting and positioning stepped surface of the ramp member thereby allowing the ramp member to move so that a different step of the stepped surface supports and positions the shaft when the interposer cam is returned to its original position. The ramp member is moved by a pinion drive which engages a gear rack formed on a surface of the ramp member.

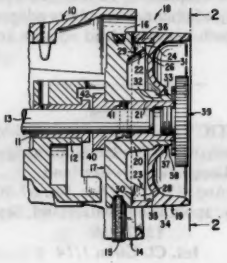
3,635,099

HANDWHEEL ASSEMBLY FOR SEWING MACHINES

William Alexander Watson, Duntocher, and Malcolm Mack, Glasgow, both of Scotland, assignors to The Singer Company, Elizabethport F., N.J.

Filed June 9, 1970, Ser. No. 44,824
Claims priority, application Great Britain, Oct. 28, 1969, 52,704
Int. Cl. F16h *55/46*
U.S. Cl. 74—230.7 **2 Claims**

A handwheel assembly comprising a plastic outer shroud formed with a radial lug disposed for register with a radial channel or slot formed in a driven pulley to prevent relative rotary movement therebetween. The shroud is concentric with the pulley, which includes a hub that extends through



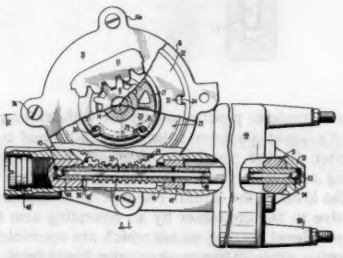
and partly beyond a central opening formed in the shroud for receiving a push-on retainer having prongs that engage the pulley hub thereby to secure it axially relative to the shroud.

3,635,100

MOTOR DRIVE ASSEMBLY FOR WINDOW REGULATORS

Joseph C. Littmann, Temperance, Mich., assignor to Dura Corporation, Toledo, Ohio

Filed Apr. 15, 1970, Ser. No. 28,669
Int. Cl. F16h *57/00, 1/18*
U.S. Cl. 74—411 **6 Claims**



A window regulator for vehicles having a reversible motor provided with a sectional drive shaft, one section having a worm meshing with a worm gear which forms a part of a spring clutch. The clutch has a regulator pinion for connection to the usual gear sector of a window regulator. One section of the drive shaft is connected to the armature of the electric motor and the sections are connected by a torsion bar, rectangular in cross section and which extends freely through the shaft sections but extends into sockets at the outer ends of these sections, the sockets being rectangular in cross section.

3,635,101

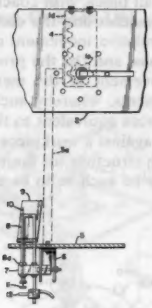
AUTOMOBILE SPEED LIMITERS

Chun-Chih Hsian, 2 Lane, 60, Tai-shun Street, Taipei, Taiwan

Continuation-in-part of application Ser. No. 541,909, Mar. 22, 1966, now abandoned. This application Feb. 6, 1969, Ser. No. 798,271
Int. Cl. B60k *31/00*
U.S. Cl. 74—526 **1 Claim**

A speed-limiting device in which an accelerator stoppage is connected to a rack. The rack can move a pinion an amount

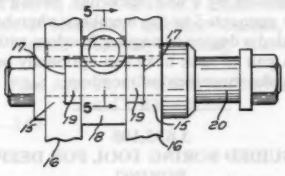
that is adjustable by a lever in order to provide speed settings.



3,635,102
MICROMETER ADJUSTMENT FOR A STOCK FEEDING DEVICE

Gary R. Skeen, 111 Pensylvania Avenue, Warwick, R.I.

Filed Oct. 13, 1969, Ser. No. 865,782
Int. Cl. G05g *1/00*; F16h *21/22*
U.S. Cl. 74—600 6 Claims



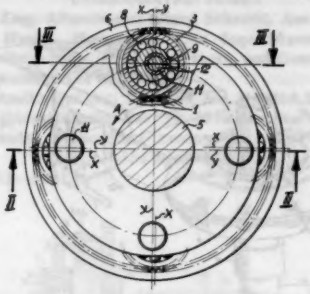
The device comprises a micrometer adjustment which is built into a ratchet-type stock feeding device for a power operated press. The ratchet-type feed is provided with spaced plates and the spaced plates are provided with parallel extensions to which normally the dragging arm is attached. In accordance with the present invention, the dragging arm is attached to a short shaft extending through a movable block which slides between the two plates. A micrometer adjustment slidably moves the block in any desired position. This provides for a fine adjustment of the drive stroke of the drive shaft.

3,635,103
PLANETARY REDUCTION GEARING

Giancarlo Monti, Varese, Italy, assignor to Siai-Marchetti S.p.A., Varese, Italy

Filed Dec. 23, 1969, Ser. No. 887,797
Claims priority, application Italy, Dec. 24, 1968, 25562A68
Int. Cl. F16h *1/28*; F16c *23/10*
U.S. Cl. 74—801 3 Claims

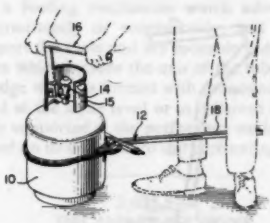
System for mounting a planet wheel on a planet carrier wherein the axis of rotation of said wheel is concentric with the pitch circle thereof and the planet wheel is supported about an axis eccentric thereto.



3,635,104
APPARATUS FOR ROTATING VALVES ON GAS CYLINDERS

Eugene D. Taylor, P.O. Box 2030, Harlingen, Tex., and Willis R. Swisher, Harlingen, Tex., assignors to said Taylor, by said Swisher

Filed June 18, 1969, Ser. No. 834,940
Int. Cl. B26b ; B25b *13/52*
U.S. Cl. 81—3 4 Claims



A cylinder wrench for inserting and removing cylinder valves from pressurized cylinders, and a vise assembly for firmly gripping cumbersome objects such as pressurized cylinders and large diameter pipes. The long-handled vise assembly includes a chain which is wrapped about the pipe or cylinder and then tightened to provide a firm grip. The wrench assembly mates with the cylinder valve and includes a gripping bar that permits high torque to be applied to the valve. Counteracting torque can be applied to the cylinder by gripping it with the vise assembly and bracing the vise assembly handle.

ERRATUM

For Class 81—63 see:
Patent No. 3,635,654

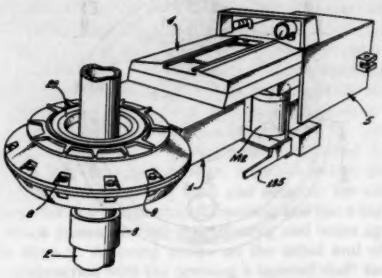
3,635,105
POWER TONG HEAD AND ASSEMBLY

John L. Dickmann, Whittier, and Howard S. Flick, Long Beach, both of Calif., assignors to Byron Jackson Inc., Long Beach, Calif.

Original application Oct. 17, 1967, Ser. No. 675,843, now Patent No. 3,483,774. Divided and this application July 22, 1969, Ser. No. 862,111
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.18 4 Claims

A power tong in which the rotary head has opposed jaws slidably mounted in jaw guides and shiftable radially outwardly by springs and radially inwardly by cam surfaces and

cam followers, the cam surfaces being compound so as to move the jaws inwardly upon rotation of an outer drive ring in either direction relative to an inner jaw supporting ring.



3,635,106
KEY FOR SPRINKLER VALVE

Douglas M. Homs, 1538 Industrial Way, Belmont, Calif.

Continuation-in-part of application Ser. No. 772,751, Nov. 1, 1968. This application Dec. 17, 1969, Ser. No. 885,916
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R **2 Claims**

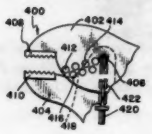
A key or wrench for turning sprinkler valve handles has a body formed at the top with a socket in the shape of a hollow Greek cross complementary to the conventional valve handle. Below the socket is a thin-walled annular skirt dimensioned to fit within the tube usually surrounding the valve. Internal, rounded protuberances in the skirt guide the valve handle into the socket. The key has an elongated handle twisted to facilitate turning the key and the valve handle seated in the socket thereof.

3,635,107
TOGGLE-TYPE HAND TOOL

Charles C. Schmidt, Topeka, Kans., assignor to Mara, Inc., Topeka, Kans.

Original application Mar. 31, 1967, Ser. No. 627,496, now Patent No. 3,496,808. Divided and this application Feb. 24, 1970, Ser. No. 19,132
Int. Cl. B25b *7/12*
U.S. Cl. 81—367 **10 Claims**

A hand tool of the toggle link or vice grip type provided with structure operative to oppose opening movement of the handles when the latter are oriented relative to the toggle linkage in locking condition in the absence of any reactive force from a workpiece. Such structure takes two basic forms, namely, (a) the compression member of the toggle linkage being swivelly connected at its opposite ends to the handles to hold its swivel connections spaced a substantially constant amount at all times, with coacting detent means carried by one of the handles and the compression member for yieldingly resisting relative movement of such elements from their locking positions, and (b) the provision of structure for limiting closing movement of the members that carry the work engaging elements, whereby such limiting action will result in reactive forces equivalent to the work engaging elements being loaded against a workpiece by closing movement of the handles. Such structure for limiting closing movement of the members can be such as to be subjected to compressive, shear or tensile stresses in the performance of its movement limiting function.



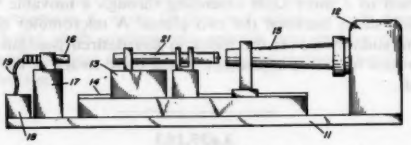
In addition to the foregoing, the invention extends to the provision of special work engaging elements that move apart during closing movement of the handles, as well as to various forms of work engaging elements that are detachably mounted, adjustably mounted and pivotally mounted upon the members that are directly attached to the handles.

The invention in its various forms involves the centers which are directly connected to the handles being either directly connected about a single pivotal axis as is customary, or being connected by a link, such link having its opposite ends pivotally connected to the members whereby the members are afforded a degree of angular freedom with respect to each other. A pair of such links can optionally be employed to prevent angular movement of members.

3,635,108
LASER-GUIDED BORING TOOL FOR DEEP HOLE BORING

Thomas E. Prince, Louisville, Ky., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 9, 1970, Ser. No. 17,834
Int. Cl. B23b *39/00*
U.S. Cl. 82—1 **3 Claims**

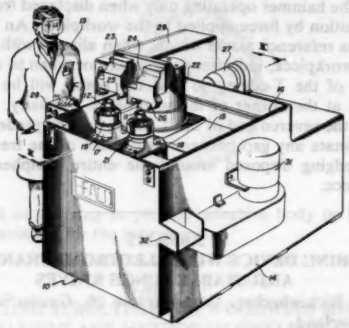


A boring tool is provided with a centering detector onto which a laser beam is directed. Deviation of the boring tool is detected and fed to a control unit and servo device which operates a pair of pusher pads to direct the boring tool back onto center. The boring tool is particularly adaptable for boring deep holes such as in large gun barrels.

3,635,109
MACHINE TOOL

Alden H. Jacobson, Princeton, Mass., assignor to The Heald Machine Company, Worcester, Mass.

Continuation of application Ser. No. 710,389, Apr. 4, 1968, now abandoned. This application June 29, 1970, Ser. No. 56,091
Int. Cl. B23b *3/06*
U.S. Cl. 82—2 D 13 Claims

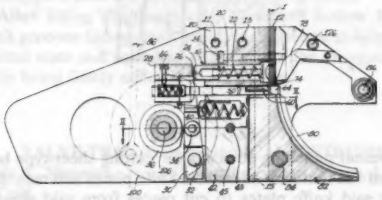


This invention relates to a machine tool and, more particularly, to apparatus having a workhead operative for rotation and a tool carrying column which is slidable along and rotatable about an axis spaced from and parallel to the axis of the workhead.

3,635,110
TAPE-CUTTING AND CONTACT FEED MECHANISM

Andre Keusch, Montreal, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Apr. 22, 1970, Ser. No. 30,737
Int. Cl. B26d *5/20*
U.S. Cl. 83—149 19 Claims

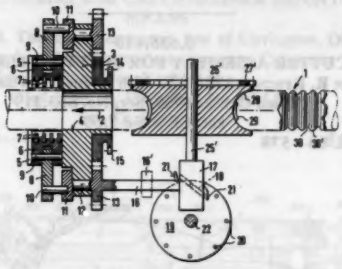


A cutting and feeding device for severing very small segments of predetermined length from a strip of feed material with a minimum of burring and feeding the small segments to a subsequent processing operation in a desired orientation. A reciprocating knife edge cooperates with a fixed knife edge to cut the small pieces from a strip fed into the cutter, and to advance the small pieces into a curved guide which guides the pieces through 90°. A reciprocating finger, synchronized with the cutters, pushes the pieces around the curved guide for delivery to the next operation. The device is particularly suitable for cutting precious metal electrical contacts for subsequent welding to a conductor strip.

3,635,111
APPARATUS FOR MAKING PERFORATIONS IN CORRUGATED TUBES

Wilhelm Zieg, Alleestrasse; Georg Schmidt, Am Lauerbach; Edgar Hauck, Hossmarkt, 234; Ingo Massel, Thomas-Klingg-Steige 199e, all of Konigsberg, and Gustav Greubel, Altershausen, all of Germany

Original application Dec. 31, 1968, Ser. No. 788,277. Divided and this application Nov. 19, 1970, Ser. No. 91,048
Claims priority, application Germany, Mar. 28, 1968, 17 78 094
Int. Cl. B23d *21/00;* B26f *1/02*
U.S. Cl. 83—183 10 Claims

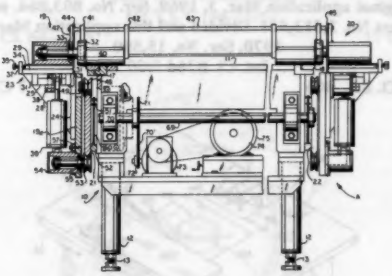


Apparatus for making perforations in helically or circumferentially corrugated plastic tubes has flat platelike perforating tools which are movable radially toward and away from the tube, a feeding mechanism which advances the tube, either intermittently or continuously, and driven carriers which support the tools and are movable radially of the tube or in planes which include the axis of the tube. Each tool has a cutting edge which is formed with pronounced teeth having tips located at the same level or at different levels. The tube is internally supported at the perforating station and is guided by a channel on its way toward the perforating station.

3,635,112
DECAMBER MACHINE

Norman D. Johnson, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed May 25, 1970, Ser. No. 40,104
Int. Cl. B23d *15/06, 19/02*
U.S. Cl. 83—402 13 Claims



A table with a flat bed of substantial length, for example, 50 feet, has a shear blade fixedly mounted along each edge thereof, the cutting edges of the shear blades being parallel and spaced apart by a distance equal to the desired trimmed width of a worksheet to be trimmed thereon. Centering means centers a worksheet placed on the bed, and vacuum chucking means anchors such worksheet to the bed with marginal portions of the sheet overlying the shear blades.

Compressed air may be introduced into the vacuum chucking means when centering a worksheet or moving such sheet along the bed to provide air bearing support for such sheet. The carriage drive means also may be used to draw a worksheet onto, and remove it from the bed.

A pair of power-driven cutter carriages are mounted for synchronized guided movement, one along each side of the machine. Each carriage has a cutter wheel mounted for shearing engagement with one of the shear blades for simultaneously trimming both lateral edges of a worksheet to a condition of straightness and parallelism with each other.

A presser roller moving ahead of each cutter wheel tends to flatten the worksheet and remove wrinkles.

3,635,113

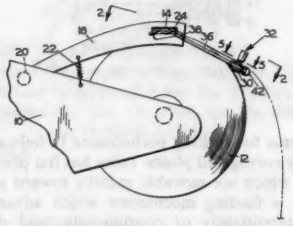
CUTTER ASSEMBLY FOR SHEET MATERIAL

Terence R. Kramer, 1226 S.E. 35th Avenue, Portland, Oreg.

Filed Oct. 2, 1969, Ser. No. 863,219

Int. Cl. B26d *7/00*

U.S. Cl. 83—578 **1 Claim**



The cutter assembly includes a hollow guide track having a slot on an upper side thereof in which a cutting element operates. The cutting element has a handle, a tongue on the handle projecting through the slot, and an enlargement operating within the track of a larger lateral dimension than the slot to lock the cutting element slidably on the track. The cutting element has a blade on each leading edge, such blade being offset to one side whereby to ride along one side edge of the slot and accomplish a shearing engagement against such edge. The invention has a pair of end arms for mounting it on a paper roll holder.

3,635,114

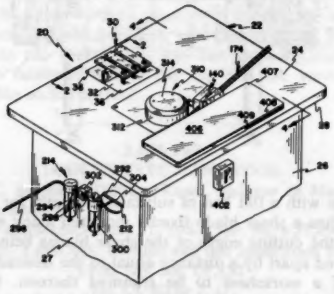
PROTECTIVE AND DECORATIVE EDGING

Alton L. Fritz, Phoenix, Ariz., assignor to Royal Industries, Pasadena, Calif.

Original application Mar. 3, 1969, Ser. No. 803,864, now Patent No. 3,513,521. Divided and this application Mar. 2, 1970, Ser. No. 15,550

Int. Cl. B26d *9/00*

U.S. Cl. 83—406 **7 Claims**



Method and apparatus for preparing a workpiece and affixing protective and decorative edging, preferably T-edging, to the peripheral edge of the workpiece, the apparatus providing (a) a slotting head for guiding the workpiece in a predetermined orientation and a moving slotting blade for cutting a groove in the peripheral edge of the workpiece; (b) a cutting tool for guiding the displacement of the T-edging, for maintaining the leading end portion of a T-edging in the proper orientation and for selectively, at the election of the operator, notching out a length of the tongue of the T-edging at a well-defined position and/or completely severing the T-edging at a precise location; and (c) a hammer for forcing the tongue of the T-edging into the slot formed in the workpiece, the hammer operating only when displaced from the at rest position by force applied to the workpiece. An indicator provides reference marks which, when aligned with a corner of the workpiece, indicates to an operator when to notch the tongue of the T-edging so that the notch will be properly located at the corner of the workpiece. Similarly, the location of the severed end of the T-edging can be predetermined to eliminate any gap between or overlap of the free ends of the T-edging disposed around the entire periphery of the workpiece.

3,635,115

PUNCHING DEVICE WITH ELECTROMECHANICALLY ADJUSTABLE PUNCH KNIVES

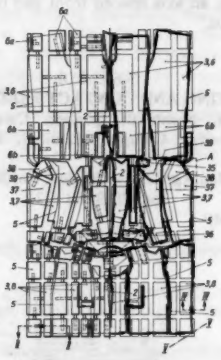
Walter Rickenbacher, Gartenstrasse 10, Gossau/Saint Gall, Switzerland

Filed May 4, 1970, Ser. No. 34,374

Claims priority, application Switzerland, May 8, 1969, 7071/69

Int. Cl. B26f *1/44*

U.S. Cl. 83—696 **9 Claims**



The present punching device is for cutting sheet-type layer pieces and has mutually adjustable knife plates and means for adjusting said knife plates to cut pieces from said sheet of desired sizes.

3,635,116

FRETTED UKRAINIAN BANDURA

Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa.

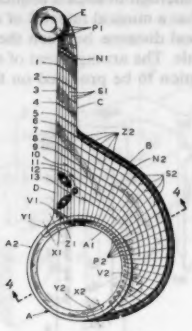
Filed Aug. 31, 1970, Ser. No. 68,240

Int. Cl. G10d *3/00, 3/06*

U.S. Cl. 84—291 **8 Claims**

A Ukrainian bandura-type musical instrument with bass strings on a neck and multiple treble strings on a resonator or sounding box body, all strings having frets, most of them multiple frets preferably inclined to the strings on the neck and part of the body; and the body having a loop or ring tail portion, a complementary portion of which may be arranged to be movable from a first or extended position in alignment

with the sounding box body and fixed part of the ring to a second position at an angle to the sounding box body and the



fixed part of the ring to provide selective body or lap rest holding positions for the instrument.

3,635,117

RING FIXING STRUCTURE FOR WOODWIND MUSICAL INSTRUMENT AND METHOD OF OBTAINING THE SAME

Akira Nagao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Oct. 28, 1970, Ser. No. 84,808

Claims priority, application Japan, Oct. 31, 1969, 44/103322

Int. Cl. B23b *31/00*; B29c *19/00*; G10d *7/00*

U.S. Cl. 84—380 **6 Claims**

In order to fix rings firmly around the elongated hollow bodies of a woodwind musical instrument, such as their joints and bell edge for reinforcing and ornamental purposes, grooves are formed, respectively, in opposite portions of the elongated hollow bodies and rings, and an adhesive of hot-melt-type is inserted and disposed in the grooves.

After fitting the ring to the elongated hollow body with both grooves facing each other, the adhesive is heated into a melted state and solidified, the ring and the elongated hollow body being firmly adhered to each other.

3,635,118

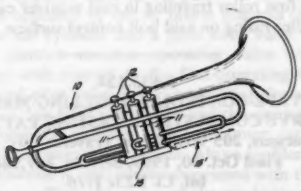
VALVE TRAY FOR A MUSICAL INSTRUMENT

Alois T. Slovacek, Jr., 961 North Cypress Street, La Habra, Calif.

Filed Feb. 24, 1970, Ser. No. 887,010

Int. Cl. G10d *7/10*

U.S. Cl. 84—397 **7 Claims**



A tray for catching oil, saliva or other fluid dripping from the valves of a valved musical instrument. The tray comprises a unitary, flexible plastic member having a bottom, sides and one closed end. The sides are either inclined toward each other or of facing, concave cross section, with the minimum spacing therebetween being less than the diameter of the valves. This permits the tray to be clip-attached by means of the sides to the bottom of the valves. The tray may contain an absorbent pad; a lip across the open end retains the pad in the tray, but permits sliding disengagement of the tray from the valves.

3,635,119

SNARE DRUM HAVING TAPERED AND FLANGED CAST METAL SHELL, AND CAST STRAINER-MOUNTING MEANS

Josephus B. Thompson, deceased, late of Covington, Ohio (by K. E. Stade, administrator), assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed June 19, 1969, Ser. No. 834,913

Int. Cl. G10d *13/02*

U.S. Cl. 84—411 **5 Claims**

A small, rigid, lightweight share drum for use in schools and elsewhere, and having a tapered flanged shell formed of cast metal. Such shell has a centered and radially outwardly extending flange, and the shell wall tapers axially in both directions from such flange. The strainer-mounting means are cast integrally with the flange, and the adjustment means for the mute or damper extends through such flange. The tension screws extend inwardly from the counterhoops, being threaded through the flange. The flesh hoops are of larger diameter than the bearing edges on the shell, yet the flange and associated tension screws protect such flesh hoops from the effects of accidental bumping or jarring.

3,635,120

TAMBOURINE

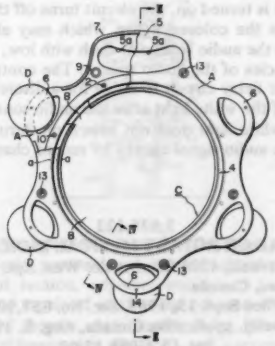
Yoshiyuki Koishikawa, 2365, Kawarada-cho, Yokkaichi, Japan

Filed July 13, 1970, Ser. No. 54,233

Claims priority, application Japan, Dec. 4, 1969, 44/14676; June 9, 1970, 45/056268

Int. Cl. G10d *13/02*

U.S. Cl. 84—418 **17 Claims**



A tambourine made of a pair of synthetic resin annular frames constituting a front and back to be overlapped and af-

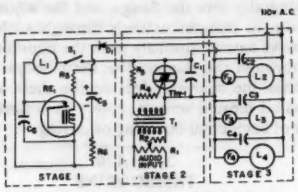
fixed to one another so as to form an annularly stepped or channel shape in cross section central area for clamping the skin with the help of a similar material skin-tensioning ring interposed between the internal peripheral edges of the respective frame pieces. The frame pieces are each preferably provided on their respective outer faces along the inner periphery of the respective annular stepped portions with roughened surface portions in the form of small radial slots or grooves which contribute to the resinous frames producing a better triller sound when rubbed by the player thereof. The frame pieces are also each provided with generally peripherally spaced projections and recesses respectively to be complementally engaged with those on the other opposed frame piece and are also provided with a handgrip portion. The frames also have recessed portions for fitting bells within the outer peripheral edges of said annular pieces. The skin or a sheet is provided with circumferentially spaced peripheral attaching holes to receive the aforementioned projections of the annular frame, and the skin is adapted to be tightly held between the respective annular pieces of said two frames. As a part of the tambourine assembly, the annular tightening piece has a stepped cross section with an offset portion to tension the sheet while cooperating with the corresponding stepped portion or recessed channel between the frames, and further includes a suitable handgrip and fastener means for tightly interconnecting the pair of frames.

3,635,121

COLOR ORGAN AND ELECTRICAL CONTROL CIRCUIT THEREFOR

Robert J. Knauff, 1003 North Seventh Street, Superior, Wis.

Filed Sept. 14, 1970, Ser. No. 72,006
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **14 Claims**



A color organ in which a plurality of colored lights flash in response to a signal from an audio source is provided with a control circuit which includes a white room light. When a signal is not being received from the audio source, the white light is on and serves as an ordinary room lamp. When the audio source is turned on, the circuit turns off the white light and activates the colored lights, which may either flash at random with the audio source or flash with low, medium, and high frequencies of the audio source. The control circuit includes a time delay circuit to delay for a discrete period the turning on of the white light after the audio source is shut off so that the white light does not switch on during regular intervals in the audio signal caused by record changing and the like.

3,635,122

LINEAR OR ROTARY MUSICAL INDICATOR

Michel B. Perrault, 4200 Sherbrooke West Apt. 20, Montreal 215, Quebec, Canada

Filed Sept. 15, 1969, Ser. No. 857,904
Claims priority, application Canada, Aug. 8, 1969, 59,045
Int. Cl. G09b *15/02*
U.S. Cl. 84—477 R **10 Claims**

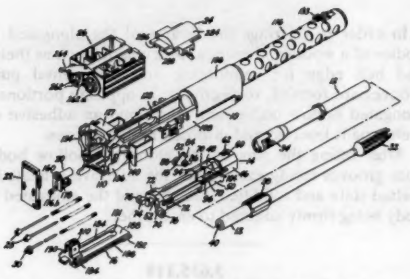
A musical indicator which is adjustable to give information concerning the chords and/or notes which are related to each other in a given manner in a selected key, includes an information-bearing member and a note-bearing member, movable relatively to each other, the note-bearing member having notes indicated thereon in such a sequence that each pair of adjacent notes has a musical interval of a perfect fifth, that is to say the musical distance between the first and fifth notes of a diatonic scale. The arrangement of notes in perfect fifths enables information to be provided on the information-bearing member in a relatively simple manner. It also enables a musical indicator to be provided with a set of interchangeable information-bearing members, each giving different information. For example, one information-bearing member may provide relatively simple information suitable for very young students, and subsequent information-bearing members in the set may provide successively more complex information for more advanced students.

3,635,123

BOLT ACCELERATOR

Richard H. Colby, Hamden, Mass., assignor to General Electric Company

Filed Apr. 7, 1969, Ser. No. 814,084
Int. Cl. F41d *1/02, 5/02, 11/12*
U.S. Cl. 89—169 **9 Claims**



A machine gun is disclosed having a receiver with a cam slot in the wall thereof, a barrel extension riding in said receiver, a bolt riding in said receiver and projecting into said barrel extension and having a control surface, and a bolt accelerator having a pivot element journaled to said barrel extension, a first roller traveling in said receiver cam slot, and a second roller riding on said bolt control surface.

3,635,124

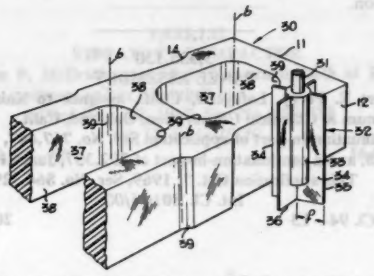
USE OF TAPE-CONTROLLED MILLING MACHINES TO CARVE COMBUSTIBLE CASTING PATTERNS

John T. Parsons, 205 Wellington, Traverse City, Mich.

Filed Oct. 20, 1969, Ser. No. 867,980
Int. Cl. B23c *1/16*
U.S. Cl. 90—11 C **5 Claims**

A tape-controlled milling machine, adjusted for material removal at a rate at least 100 times as great as for steel, is

used to carve casting patterns from expanded polystyrene. Billets of the polystyrene material are carved without repetitive passes. Each rotatable cutter utilized is directed by the program of the tape to bring its edge through the excess



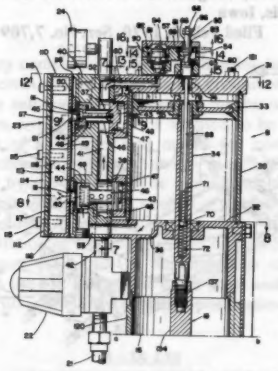
material of the billet all the way to the final surface to be carved, and then to proceed along the final contour to be cut by it. Cost savings, material even where a single combustible pattern is to be produced, are multiplied when the tape is reused.

3,635,125

DOUBLE-ACTING HYDRAULIC PUMP AND AIR MOTOR THEREFOR

Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Mar. 21, 1969, Ser. No. 809,235
Int. Cl. F01b *23/00;* F01l *25/06, 15/16*
U.S. Cl. 91—55 **12 Claims**



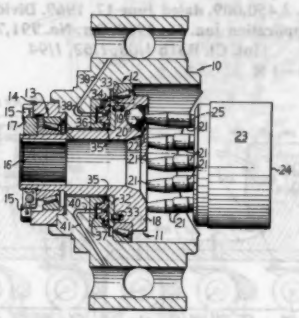
A hydraulic pump and double-acting air motor therefor including means for controlling the inlet and exhaust of air to and from the opposite sides of the piston in the air cylinder. A pilot valve operated by the air piston controls one operating valve for the cylinder and a pilot relay valve. The pilot relay valve controls another operating valve which is in reverse phase with respect to the first-operating valve. The piston-operated pilot valve has a snap action feature so that the pilot valve, the pilot relay valve and the operating valves all reverse condition abruptly with a minimum dwell to provide a smoother power transmission. Also a muffler which inhibits ice formation is operatively associated with the operating valves for muffling the noise of the air being exhausted from the air cylinder through the operating valves with minimal accumulation of ice.

3,635,126

HYDROSTATIC BUTTON BEARINGS FOR PUMPS AND MOTORS

William K. Engel, Peoria; William B. Norick, Joliet; James L. St. Germain, Plainfield, and Peter Hakkenberg Van Gaasbeek, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 17, 1969, Ser. No. 791,955
Int. Cl. F01b *13/04;* F04b *1/26*
U.S. Cl. 92—57 **6 Claims**



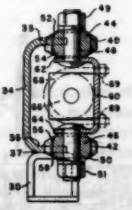
In axial-piston, hydraulic pumps and motors, the thrust loadings of the pistons on their bearing supports vary proportionally to pressures in the unit and also circumferentially around the bearing supports. By employing hydrostatic button bearings pressurized in "sets" around the bearing support with at least one set pressurized with the unit's inlet pressure and another "set" pressurized by the unit's outlet pressure, improved bearing performance is achieved. Also, certain surface configuration forming the sills and recesses of the individual buttons can enhance bearing performance.

3,635,127

HYDRAULIC CYLINDER MOUNT FOR A FORAGE HARVESTER

Robert A. Wagstoff, 350 E. Conestoga Street, New Holland, Pa.

Original application Aug. 26, 1968, Ser. No. 762,930, now Patent No. 3,516,713. Divided and this application Jan. 2, 1970, Ser. No. 5,397
Int. Cl. F01b *29/08;* F16m *13/02*
U.S. Cl. 92—161 **1 Claim**



A hydraulic cylinder mount for the spout control of a forage harvester comprising a support attached to a fixed vertical spout section, adjacent the upper end thereof, a bracket having a pair of axially aligned, spaced-apart retaining rings fixed therein, said bracket being fixed to the support, spherical bearings in the rings, and a second bracket to which a hydraulic cylinder is clamped, the second bracket being connected to the bearings for pivotal movement therewith so that the pivot axis of the cylinder mount passes

through the bearings and the center of the cylinder, adjacent the rod end of the cylinder housing, producing an effective force column between the pivot axis and the rotatable spout section of the harvester to which the cylinder rod is connected.

3,635,128

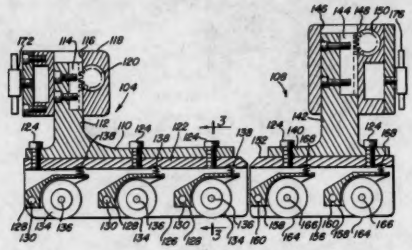
MACHINES FOR MAKING ENVELOPES

Joseph J. Dohnalik, Cook County, Ill., assignor to Garden City Envelope Company, Chicago, Ill.

Original application Nov. 4, 1966, Ser. No. 591,995, now Patent No. 3,450,009, dated June 17, 1969. Divided and this application Jan. 16, 1969, Ser. No. 791,722

Int. Cl. B31b *1/08, 1/62, 1/94*

U.S. Cl. 93—1 R **2 Claims**



An envelope-forming machine for making large diagonal seam envelopes includes a flat horizontal bed, side-flap folders, a rotary segmental applicator and a bottom-flap folder over the bed, with presser carriages extending beneath the applicator shaft and including a plurality of presser rollers disposed over the outer edges of the path of travel of the envelope blanks and closely adjacent to the outer edges of the applicator. The presser rollers are mounted on stub shafts extending inward from a support, and a thin cover plate extends over the inner side of each set of rollers. The carriages are supported for vertical reciprocating adjustment and horizontal sliding adjustment. The mechanism for feeding the blank to the machine includes a rotary drum and two sets of independently resiliently mounted rollers disposed in opposite echelon arrangement for engaging the leading edges of a blank for forming a diagonal seam envelope.

3,635,129

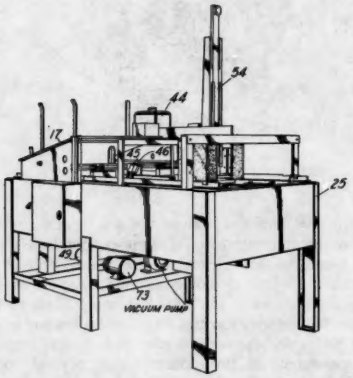
TRAY FORMER

Vincent Cobelo, Jr., Dunedin, Fla., assignor to ABC Packaging Machine Corporation

Filed Sept. 15, 1969, Ser. No. 857,705

Int. Cl. B31b *1/44*

U.S. Cl. 93—51 R **6 Claims**



A machine for forming shipping cases or trays from flat blanks having a storage magazine, stripping means for removing one blank at a time from the magazine, glue-applying means for selectively applying glue to desired portions of the blank, an indexing means for advancing the blank past the glue-applying means to a tray-forming mandrel, and means cooperative with the mandrel for folding up the sides of the blank and folding the ends thereof in threefold overlapping relation.

3,635,130

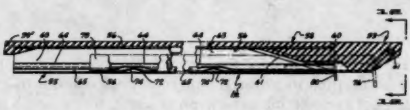
PANEL ASSEMBLY

Robert E. Perry, Lafayette, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of application Ser. No. 767,447, Oct. 14, 1968, and a continuation-in-part of 792,357, Jan. 21, 1969. This application Oct. 7, 1969, Ser. No. 864,329

Int. Cl. E01c *5/00*

U.S. Cl. 94—13 **20 Claims**



This invention relates to an improved landing mat installation and the like comprised of a plurality of removably interlocked panels, wherein the joints formed by various marginal edges of the panels are provided with improved cooperating locking and sealing means that advantageously inhibit the penetration of water and the like through the joints as well as facilitating the installation and dismantlement of the panels making up the landing mat installation.

3,635,131

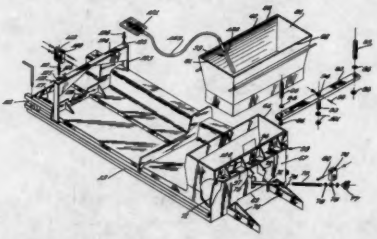
SLIP FORM CURB AND GUTTER MACHINE

Richard D. Larsen, Denver, Iowa, and Harold E. Miller, Milwaukee, Wis., assignors to Curbmaster of America, Inc., Cedar Falls, Iowa

Filed Feb. 2, 1970, Ser. No. 7,709

Int. Cl. E01c *19/30*

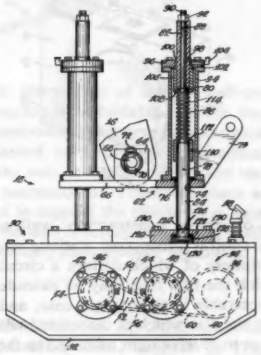
U.S. Cl. 94—46 **22 Claims**



Self-propelled curb and gutter forming machine mounted on continuous traction tread devices. A curb mold form is suspended from the main frame of the machine and extends between the continuous traction tread devices. The main frame of the machine is suspended from the tread devices on three jacks, two of which are provided on one side of the machine and control the grade and a third of which is provided on the opposite side of the machine and controls the slope of the main frame and curb mold form. The curb mold form is vertically pivoted at its front end to a drawbar at the front of the main frame and is suspended from the main frame at its rear end to move laterally about the axis of the vertical pivot. The continuous traction tread devices are driven by independent hydraulic motors, controlled by a variable flow divider valve either manually operated or automatically operated under the control of a sensor biased into engagement with a line extending along the side of the roadway. The three jacks are in the form of self-locking screw

jacks driven by individual hydraulic motors. The two jacks on one side of the machine conform the machine to the grade of the roadway and are controlled by grade sensors. The hydraulic jack on the opposite side of the machine conforms the machine to the slope of the roadway and is controlled by a pendulum control.

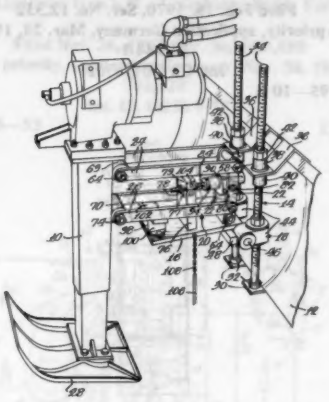
3,635,132
VIBRATORY COMPACTOR
William P. McIlrath, and Chris Stougaard, both of Racine, Wis., assignors to Rex Chainbelt Inc.
Filed Sept. 22, 1969, Ser. No. 859,933
Int. Cl. E01c *19/30*
U.S. Cl. 94—48 **16 Claims**



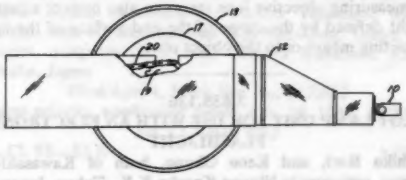
A vibratory compactor including a housing having vibratory means therein and for engaging the ground to compact the same, and a self-leveling support for the housing including spring means, a mounting device adapted to be connected to the lift arm of a vehicle, and means for compressing the springs whether the mounting device is moved upwardly or downwardly by the lift arm. The vibratory means include a pair of spaced shafts bearing eccentric weights and a motor within the housing for driving the shafts in a manner to cause vertical oscillation of the housing. The drive includes a chain extending from the motor to the underside of one of the shafts and to the top side of the other shaft and thence back to the motor to rotate the shafts in opposite directions.

3,635,133
MOUNTING FOR COMPACTORS
Chris Stougaard, Racine, Wis., assignor to Racine Federated Industries Corporation, Racine, Wis.
Filed Oct. 29, 1969, Ser. No. 872,046
Int. Cl. E01c *19/30*
U.S. Cl. 94—49 **10 Claims**

A device for mounting a material compactor on a vehicle including means for securing the mounting device to the vehicle, a baseplate including an adjustable connection to the vehicle securing means, a pair of linkage arms pivotally mounted to the baseplate to allow conformation of the compactor to ground level, upper and lower spaced pairs of connecting arms having one end pivotally joined to the linkage arms and the other end pivotally connected to the material compactor to allow vertical compactor to allow vertical compactor movement without substantially transmitting reaction to the retaining vehicle, means for adjusting the compactor angle, shock-absorbing means on the baseplate to cushion blows of the connecting arms, and means to lock the connecting arms in an elevated position for vehicle movement with the compactor suspended above ground level.



3,635,134
VIBRATORY ROLLERS
Hubert E. Thomas, Francis Lane, Chester, N.J.
Filed Dec. 3, 1969, Ser. No. 881,671
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 **7 Claims**



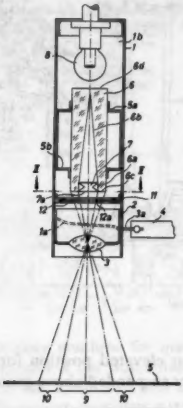
The name and broad description of the invention is "Friction-Driven Vibrator." This invention is a new method of providing power to rotate the eccentric weights or shafts of a vibratory roller. The eccentric weights and shafts are known herein as vibrator elements. This new method utilizes the drawbar pull of the towing vehicle to supply power to rotate the vibrator element(s). The new method provides a friction-driven drive train that secures power from the drawbar pull of the towing vehicle and is dependent on the drawbar pull of the towing vehicle, the tendency of the roller drum to rotate as a force is applied radially to the drum through axles on the ends of the drum which are concentric to the drum, the coefficient of friction between the roller drum and the surface being rolled and compacted, and the weight of the towed roller. Rotary motion and power is transferred from the rotating drum through a combination of means to drive the vibrator element(s) in a rotary fashion.

3,635,135

LIGHT-MEASURING MEANS FOR MICROFILM CAMERA

Kasimir Ambraschka, Unterhaching, and Horst Bickl, Munich, both of Germany, assignors to Agfa-Gevaert AG, Munich, Germany

Filed Feb. 18, 1970, Ser. No. 12,332
Claims priority, application Germany, Mar. 24, 1969, P 19 14 944.1
Int. Cl. G01j 1/02
U.S. Cl. 95—10 A 8 Claims



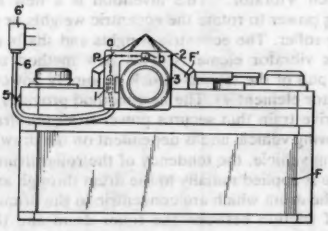
A light-measuring device for microfilm cameras which is adapted to measure in a point-by-point manner the brightness of an object plane. A small area of an object plane is projected by means of suitable light source via a measuring objective lens onto a measuring photoelectric cell. Light-conducting means are optically aligned with the objective lens and the light source. The photoelectric cell is mounted in the light-conducting means and has an end surface which is coplanar with an end surface of the light-conducting means. The measuring objective lens serves to also project a pattern of light defined by the shape of the end surface of the light-conducting means onto the object plane.

3,635,136

PILOT LAMP UNIT FOR USE WITH AN ELECTRONIC FLASHLIGHT

Kunihiko Hori, and Keno Okuno, both of Kawasaki-shi, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 9, 1969, Ser. No. 856,424
Claims priority, application Japan, Sept. 16, 1968, 43/80247
Int. Cl. G03b 17/20
U.S. Cl. 95—11 R 7 Claims



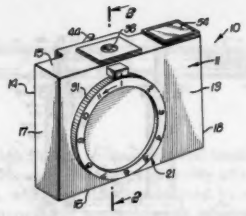
A pilot lamp unit, for use with an electronic flash gun, attachable to a camera, having a viewfinder. The unit includes a pilot lamp, a first member having a reflecting surface for receiving light from the pilot lamp and directing it to the viewfinder in a first direction, a second member having at least one reflecting surface for receiving light from the pilot lamp and directing it to the viewfinder in a second direction, whereby the operator can readily observe the light regardless of whether the camera is horizontally or vertically positioned.

3,635,137

CAMERA WITH DRUM SUPPORTED FILM STRIP

Melville R. Pollard, Jr., 19930 Fair Street, Woodland Hills, Calif., assignor to Stanley A. Ceplius, Garden Grove; Edward Tanner, Northridge and Melville R. Pollard, Jr., Woodland Hills, Calif., part interest to each

Filed Sept. 2, 1970, Ser. No. 69,027
Int. Cl. G03b 19/02
U.S. Cl. 95—11 R 10 Claims



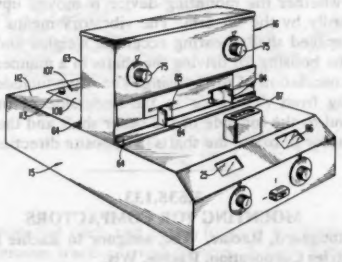
A camera of simple construction, well adapted to film loading at a central processing station, employs a rotary drum the periphery of which defines a circular sequence of flats over which the film strip may be extended, the film and drum being rotatable in the camera case, and the film being urged against the flat which is associated with the film section in position to receive light admitted to the camera interior, for field flatness.

3,635,138

PHOTOCOMPOSING MACHINE

Forrest S. Mabry, 4009 St. John's Lane, Ellicott City, Md.

Filed Oct. 15, 1970, Ser. No. 81,068
Int. Cl. B41b 13/10, 15/06, 21/20
U.S. Cl. 95—12 15 Claims



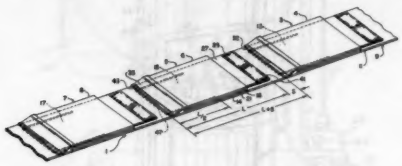
A machine for producing lines of predetermined length, angularity and thickness on photographic film or paper with precision. The machine employs a film-receiving platform and means to drive this platform along a linear path and to turn it on a rotational axis. A portable film holder serves to transport film to and from the machine with the film protected from exposure to light and serves the dual purpose of constituting a closure for the lighttight body of the machine while the film is released onto the movable platform. Readily interchangeable units are mountable on the main body of the machine for producing lines and indicia characters, respectively. A separate device is employed by a draftsman to produce a program upon which a given sequence of opera-

tions of the machine is based. The machine is useful in the production of business forms, charts, printed circuits and similar articles where a master film is used directly in the manufacturing process.

3,635,139
PHOTOGRAPHIC FILM-UNIT ASSEMBLAGE

Joseph D. Guite, Sr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,473
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **24 Claims**

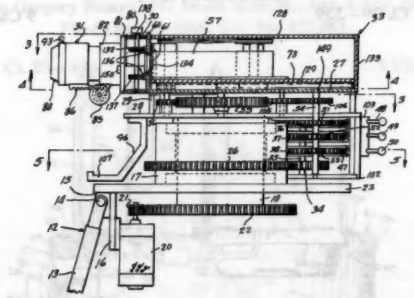


An improved assemblage of integral self-processing film units interconnected by a foldable web for transporting the film units in cooperating photographic apparatus is disclosed. The web is adapted, by a series of longitudinally extending flaps cut from the web, to lie flat and support the film units in closely spaced succession on a common plane when the web is unfolded, and to support the film units in superposed relationship when the web is folded in a zigzag configuration for use in the cooperating photographic apparatus.

3,635,140
TRIPOD-MOUNTED SCANNING CAMERA

Jesse D. Wolf, Golden, Colo., assignor to Trans Horizons, Inc., Ontario, Canada

Filed Sept. 5, 1969, Ser. No. 855,681
Int. Cl. G03b *37/00*
U.S. Cl. 95—15 **17 Claims**

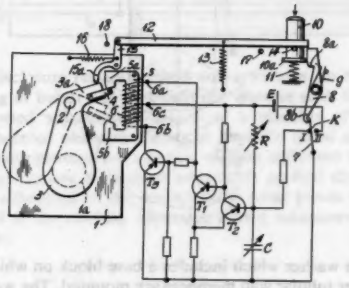


A rotary panoramic camera assembly consisting of a support and a camera rotatably mounted thereon and driven in a horizontal plane by a reversible electric motor whose operation is controlled by microswitches at opposite ends of a specified arc of scanning traverse of the camera. The camera has changeable lenses and a changeable film cassette having a film advance mechanism driven through a gear system by the main camera motor. The gear system includes a speed-selecting gear-change assembly to change the speed of film movement in accordance with a change of camera lenses. The camera includes adjustable focusing mechanism, an automatic iris control system, an adjustable aperture, a film footage indicator, and a solenoid-operated idler gear in the gear system which automatically uncouples the film advance mechanism from the system at the end of the forward scan of the camera and during the return movement of the camera to its starting position for repeating the scan.

3,635,141
PHOTOGRAPHIC CAMERA WITH SHUTTER BLADE SYSTEM EXECUTING RECIPROCATING MOTION DURING EXPOSURE

Franz W. R. Starp, and Vladimir Racki, both of Calmbach, Black Forest, Germany, assignors to Pronter Weck Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany

Filed Nov. 26, 1965, Ser. No. 509,888
Claims priority, application Germany, Nov. 30, 1964, G 42,139
Int. Cl. G03b *9/58*
U.S. Cl. 95—53 **12 Claims**

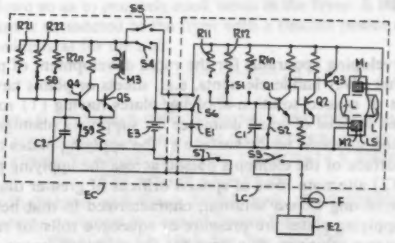


A reciprocating shutter blade system for a photographic camera comprises a shutter blade system activated by an electromagnet, and a permanent magnet coupled to the shutter blade system and participating in the motion of the shutter blade system. Only one pole of the permanent magnet projects into the magnetic field of the electromagnet.

3,635,142
EXCHANGE LENS WITH THE LENS-SHUTTER

Takeshi Ataka, Sumiyoshi-ku; Shohei Tenkumo; Minoru Sekita, both of Sakai-shi, and Yuji Nakaniwa, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1969, Ser. No. 813,622
Claims priority, application Japan, Apr. 10, 1968, 43/23803
Int. Cl. G03b *9/62*
U.S. Cl. 95—53 E **3 Claims**



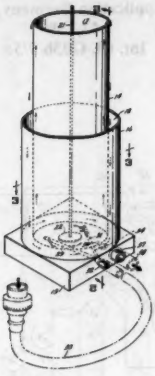
A control circuit sets the lens shutter in action in response to the opening action of a focal plane shutter and closes the focal plane shutter after the lens shutter is closed, so that the proper exposure function of the lens shutter is maintained when the focal plane shutter is opened or closed.

3,635,143

FILM WASHING DEVICE

Thomas W. Talley, 940 North Lane, and Thomas M. Talley, 6570 Devonwood Drive,, both of Cincinnati, Ohio

Filed Oct. 27, 1969, Ser. No. 869,721
Int. Cl. G03d 3/02
U.S. Cl. 95—97 4 Claims



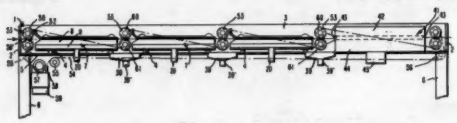
A film washer which includes a base block on which inner and outer tubular wall members are mounted. The wall members extend upwardly to define an inner chamber inside the inner wall member and an outer chamber between the wall members. Upper ends of the chambers are open. An inlet passageway in the base block supplies wash liquid into the inner chamber. Jets direct the liquid tangentially to cause the liquid to swirl around film reels mounted in the inner chamber. The wash liquid overflows the upper end of the inner wall member into the outer chamber. A discharge passageway in the base block receives wash liquid from the outer chamber.

3,635,144

FLOATING FILM PHOTOGRAPHIC DEVELOPING APPARATUS

Robert Haun Beck, Fairhaven, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1969, Ser. No. 886,618
Int. Cl. G03d 3/00
U.S. Cl. 95—89 R 4 Claims



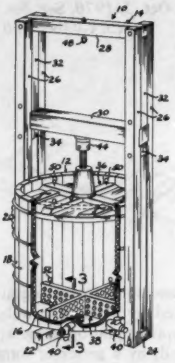
Developing apparatus for the rapid development of photographic silver halide elements, e.g., sheets or plates having a series of spaced solution-applying plates having (1) rows of spaced orifices of small diameter for supplying photographic treating solutions to the surface of the applying plates and to the surface of the elements passed across the applying plates, and (2) alternate rows of spaced orifices of greater diameter for removing excess solution; characterized in that between the applying plates are pressure or squeegee rolls for removing excess solutions, drip pans for the solutions, cover plates extending over the applying plates and flexible sealing strips at the entrance and exit ends of the cover plates, which strips are adapted to press against the back surface of the photographic elements. The apparatus can have an associated drying chamber adjacent the final solution-applying plate.

3,635,145

FRUIT PRESS AND FERMENTATION TANK

Joseph A. Nardella, 1500 "T" Street, Sacramento, Calif.

Continuation-in-part of application Ser. No. 768,030, Oct. 16, 1968, now abandoned. This application July 2, 1970, Ser. No. 52,040
Int. Cl. C12h 1/22
U.S. Cl. 99—277.1 6 Claims



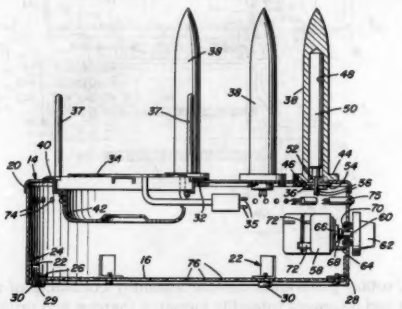
A vertical open framework having a base, transversely surrounds and supports a tank. A fruit pulp removal frame disposed in the tank bottom permits draining off the fruit juice through a drain spout and easy removal of the crushed fruit pulp.

3,635,146

HEATING APPARATUS FOR BREAD AND FILLER MATERIAL

Jean-Pierre Aubert, Geneva, Switzerland, assignor to Commercial Holding & Metals Corporation, Toronto, Canada

Filed Oct. 26, 1970, Ser. No. 83,981
Int. Cl. A23 ; A47j
U.S. Cl. 99—339 9 Claims



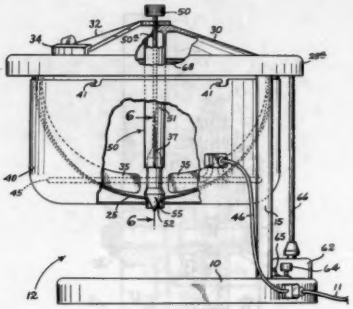
A heating device having six heating cones for simultaneously toasting and defining elongated central openings in bread, such as French bread, and having an electric range element on which the filler material may be heated. The heating cones are divided into two groups of three cones each, and the power delivered to each group is regulated by respective continuously adjustable controls. Similarly the power delivered to the electric range element is regulated by a continuously adjustable control. A pilot light is associated with each adjustable control member and indicates when that member is delivering power. The device is further provided with means for expelling unwanted heat from its casing.

3,635,147

COMBINATION COOKING-STIRRING VESSEL

Wallace G. T. Lee, 602 S. W. Park No. 215, Portland, Oreg.

Filed July 23, 1970, Ser. No. 57,559
Int. Cl. A47j 27/02
U.S. Cl. 99—348 14 Claims



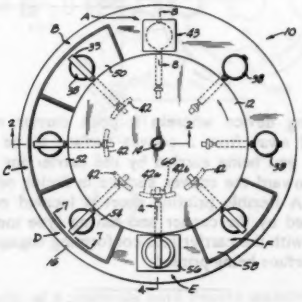
A vessel for simultaneous cooking and stirring of food ingredients in the form of a bowl provided with an electrical heating element and two sets of stirring blades, one set provided adjacent the wall of the bowl and the other set mounted on a central handle, both sets being rotated by means of a motor drive applied to the rim of the bowl. The bowl is elevated to provide space for the insertion of a plate underneath and is provided with a central hole in the bottom which during the course of the cooking operation is covered by a plug secured to the central handle which may be lifted upward, after the cooking operation is complete, to uncover the opening in the bowl through which the contents can then be pushed out by the stirring action of the blades onto the plate.

3,635,148

MACHINE FOR PROCESSING SPAGHETTI

Ligor Gregory Fenerli, 341 South Main St., Ann Arbor, Mich.

Filed Oct. 29, 1969, Ser. No. 872,083
Int. Cl. A47j 37/12
U.S. Cl. 99—404 4 Claims



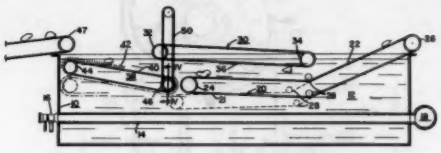
Apparatus for continuously converting precooked spaghetti to a fully cooked and sauced food product wherein a rotatable table has a plurality of work stations positioned around the periphery of the table. A plurality of baskets are movably supported on the table so that they project outwardly therefrom and are movable downwardly at certain stations for food processing and basket cleaning purposes and are inverted at an unload station where the final food product is dispensed. Basket supports on the table move with the table in a manner to provide for this selective up-and-down and inverting movement of the baskets.

3,635,149

CONTINUOUS FRYING DEVICE

Benjamin C. Smith, and Ernest R. Pridham, both of Lunenburg, Nova Scotia, Canada, assignors to National Sea Products Limited, Halifax, Nova Scotia, Canada

Division of Ser. No. 693,461, Dec. 26, 1967.
Filed Nov. 3, 1970, Ser. No. 86,530
Claims priority, application Canada, Oct. 25, 1967, 3,406
Int. Cl. A47j 37/12
U.S. Cl. 99—404 11 Claims



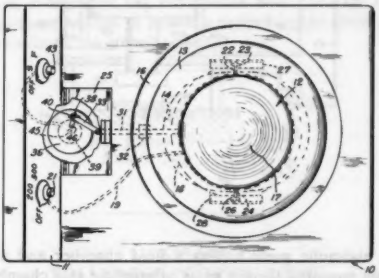
The disclosure recites method and apparatus for the deep fat frying of batter coated foodstuffs wherein such foodstuff is supported adjacent the points of a plurality of closely spaced pointed elements during at least the initial stages of the cooking process for a period of time sufficient to allow the batter coating to become adequately cooked thereby to prevent adherence of the latter both to other pieces of foodstuff and to the cooking apparatus during subsequent cooking stages.

3,635,150

OSCILLATING DEEP FRYER

Marcel M. Piedallu, 2221 Mary Jane Lane, Park Ridge, Ill.

Filed Dec. 17, 1969, Ser. No. 885,665
Int. Cl. A47j 37/12
U.S. Cl. 99—409 5 Claims



An oscillating deep fryer for cooking items such as souffle potatoes which has a deep-frying container with a convex bottom which is oscillated back and forth and also slightly up and down so as to properly cook items in the fryer. A heating element is connected to the fryer with a flexible power cable to provide heat for the unit.

3,635,151

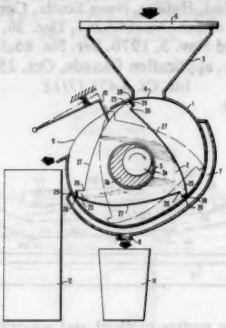
APPARATUS FOR RECOVERING LIQUIDS FROM LIQUID-CONTAINING SOLID MATERIALS OF DIFFERENT CONSISTENCIES, ESPECIALLY FROM FRUITS OF ANY TYPE

Franz Preisinger, and Ernst Reichl, both of Oberelchingen, Germany, assignors to Gugelot Design GmbH

Filed Sept. 12, 1969, Ser. No. 857,320
Claims priority, application Austria, Sept. 13, 1968, A 8967/68
Int. Cl. B30b 9/06
U.S. Cl. 100—127 11 Claims

An apparatus for obtaining liquids from liquid-containing solid materials or goods of different consistency, especially

from fruits, in which the pressing-out of the liquid is realized by means of a rotary piston device of trochoidal construction



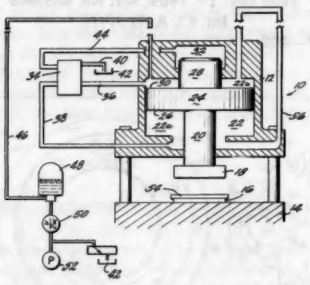
which automatically discharges the residue in cyclic operation.

3,635,152

HYDRAULIC PRESS

Peter B. Olmsted, Ann Arbor, Mich., assignor to Olmsted Products Co., Ann Arbor, Mich.

Filed Dec. 4, 1969, Ser. No. 882,222
Int. Cl. B30b *1/32*
U.S. Cl. 100—269 B 3 Claims



A hydraulic press having a fluid chamber and a piston slidably mounted therein so as to separate said chamber into a pair of portions. A conduit of "excessive" length connects the chamber portions and functions as a valve in point of time to provide the desired isolation of the chamber portions from each other and also to provide intensified pressure on the desired side of the piston.

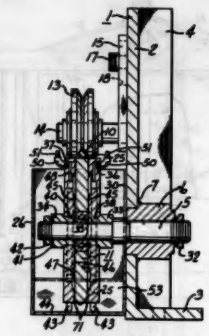
3,635,153

HIGH-SPEED PRINTING APPARATUS FOR WIRELIKE ARTICLES

Roger H. Gartside, Township of Shaler, Allegheny County, Pa., assignor to The Pannier Corporation

Filed May 13, 1970, Ser. No. 36,771
Int. Cl. B41f *17/10, 9/10;* F16j *15/40*
U.S. Cl. 101—37 14 Claims

High-speed printing apparatus for printing indicia on a wirelike article as the article is moved through the apparatus wherein a printing wheel is rotatably mounted on a shaft supported from a frame and is provided with peripheral printing surface with intaglio engraving incorporated into the printing surface. Guide rollers are mounted adjacent the printing wheel to direct and guide the article into and out of engagement with the peripheral printing surface. Movement of the article rotates the printing wheel, which receives ink at its printing surface when a portion of the wheel passes through an ink reservoir. Nonrotatable disc-shaped members are mounted adjacent each side of the printing wheel, and have peripheral surfaces congruent with the printing wheel printing surface. Gas passage means are provided within each disc



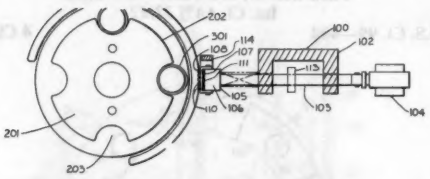
member to receive a gas supply, such as air, to form a gas seal bearing between the side surface of the printing wheel and the adjacent side surfaces of the disc members. Blade means is disposed at an acute angle relative to the printing surface in a direction against the rotational direction of the printing wheel to shear away excess ink deposited on the printing surface.

3,635,154

APPARATUS FOR PRINTING ON CONVEX SURFACES

Herbert C. Gery, Villas, N.J., and Marvin S. Samson, Philadelphia, Pa., assignors to Medical Electroscience and Pharmaceuticals, Inc., Cherry Hill, N.J.

Filed Sept. 29, 1969, Ser. No. 861,712
Int. Cl. B41f *17/20*
U.S. Cl. 101—44 5 Claims



A printing device wherein a print carrier is movable toward and away from a convex surface to be printed, a depressible pad being carried by the carrier for movement therewith toward the convex surface in facing relation with the latter. A flexible printing sheet is located on the pad, being carried by the carrier and having type members, for movement with the carrier into conforming engagement with a convex surface being printed.

3,635,155

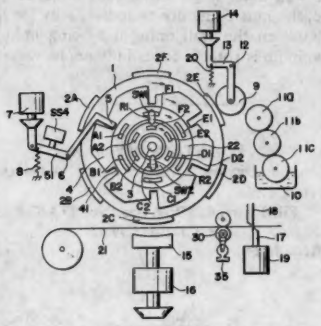
TICKET-VENDING APPARATUS

Noriaki Minami; Tamotu Okawa, and Yoshiomi Iizima, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sept. 15, 1969, Ser. No. 857,756
Claims priority, application Japan, Sept. 13, 1968, 43/66485
Int. Cl. B41j *05/00, 11/10*
U.S. Cl. 101—93 R 8 Claims

Improvement in vending apparatus for vending various kinds of tickets, wherein any selected stamp out of a group of

stamps arranged on a stamp-holder surface, such as a cylindrical surface of a stamp-drum or a surface of an endless belt, is accurately driven to the printing position and is



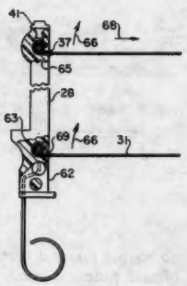
properly fed by ink, regardless of the position of such stamp when the selection is made. By means of such function, the apparatus is always able to print tickets clearly and precisely, even after a long interval of the printing operation.

3,635,156

FATIGUE-RESISTANT ATTACHMENT FOR HIGHLY STRESSED MEMBERS SUCH AS PRINT HAMMERS

Frederick G. Krebs; Stephen D. Marcey, both of Dayton, Ohio, and Samuel A. Redman, Garden City, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 6, 1969, Ser. No. 863,811
Int. Cl. B41j *9/02*
U.S. Cl. 101—93 C **11 Claims**



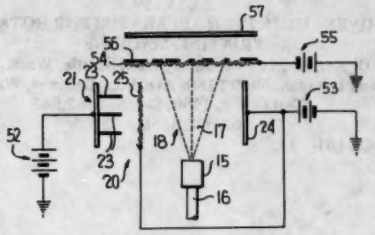
Attachment of a relatively hard flexure member to a relatively elastic body member by a combination of mechanical anchoring and adhesive bonding is disclosed. An adhesive bond free of surface voids and affording intimate contact between an adhesive material and a thermoplastic elastic member is achieved by interfacing materials in the viscous state followed by cure to a resilient state; an attachment immune to repeated high-energy loading in tension and flexure and free of stress concentrations in the members results. Application of the attachment toward anchoring a metal spring within a plastic hammer and to a metal base member for a high-speed printer mechanism is disclosed.

3,635,157

METHOD AND APPARATUS FOR ELECTROSTATICALLY CHARGING PARTICLES FOR PRINTING OR COATING

James R. A. Taylor, Chicago, and William A. Chambers, Harvey, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,977
Int. Cl. B41f *9/00, 15/00*
U.S. Cl. 101—114 **15 Claims**



Provisions for electrostatically charging particles, as in an electrostatic printing operation, include a corona source for providing ionization in a predetermined region, a plate electrode spaced from the corona source, a grid electrode adjacent the corona source and spaced from the plate electrode and a nozzle for directing a flow of the finely divided particles intermediate the plate and grid electrodes. The grid electrode draws ions from the corona source into the region intermediate the plate and grid electrodes. A rotatable drum may be provided proximate the region of electrostatic charging of the particles to receive the particles on the surface thereof for transportation to a printing or application zone. Alternatively, a stencil screen may be provided proximate the region of charging of the particles to direct passage of the particles therethrough to define a desired image upon a substrate proximate the stencil screen.

ERRATUM

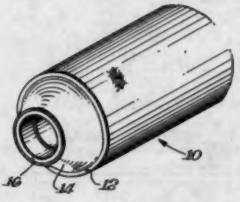
For Class 101—142 see:
Patent No. 3,635,167

3,635,158

ROLLER FOR PRINTING PRESS

William D. Budinger, 302 River Road, Wilmington, Del.

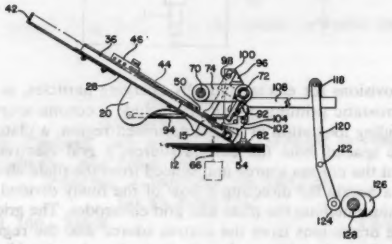
Continuation-in-part of application Ser. No. 767,980, Oct. 16, 1968. This application Oct. 6, 1969, Ser. No. 864,052
Int. Cl. B41l *25/18, 27/12*
U.S. Cl. 101—147 **10 Claims**



Very effective and long-lived printing roller has relatively smooth roll surface of long preferably durable fibers with a denier preferably less than 3, bonded together by yieldable binder, at least the outer portion of the surface being porous.

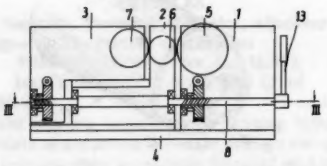
Fibrous surface can be provided by helically wrapping a relatively narrow sheet of felted fibers around roll core and cementing it in place under pressure with helical edges carefully butted together. Alternatively a sheet sufficiently wide can be circularly wrapped several times around the core, cemented in place and then ground to a uniform cylindrical surface, or felted tube can be shrunk on. Raising of a little nap on the surface is helpful. Roller removes hickeys when used in inking train and is also good for dampening in dampening train.

3,635,159
OVERCHUTE FEED APPARATUS FOR ROTARY PRINTING MACHINE
Jack D. Keeler, 3107 Broadway East, Seattle, Wash., and Edmund I. Fagan, 5059 116th Ave. S.E., Bellevue, Wash.
Filed Oct. 1, 1969, Ser. No. 862,845
Int. Cl. B65h *3/08*
U.S. Cl. 101—232 **3 Claims**



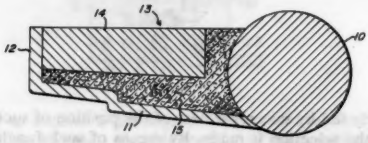
Auxiliary paper feeding mechanism for a duplicating machine in which an overchute tray with a secondary paper supply is placed above the main paper stock supply. The secondary supply of paper is fed into the duplicating machine by the same feeding apparatus as is used to feed the primary paper supply. Linkage and drive mechanisms for feeding the paper sheets from the overchute are attached to the working parts of the duplicator. Air pressure is directed to the tray to assist in separating the paper sheets for feeding. The overchute tray assembly can be removed or positioned to an inoperative condition without obstructing the normal feeding of paper from the primary supply into the machine.

3,635,160
PRINTING UNIT INTERRUPTER FOR ROTARY PRINTING PRESSES
Wolfgang Specht, Gardessen, and Bernd Bertram, Braunschweig, both of Germany, assignors to S. M. B. Sondermaschinen GmbH, Braunschweig, Germany
Filed July 24, 1970, Ser. No. 57,923
Claims priority, application Germany, July 25, 1969, G 69 29 358.7
Int. Cl. B41f *13/20*, *13/26*
U.S. Cl. 101—247 **4 Claims**



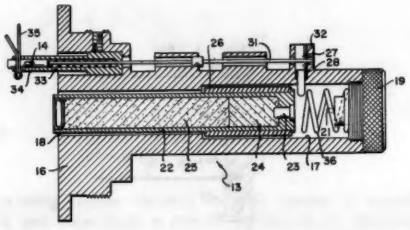
A printing unit for rotary printing presses comprises three wall units, relatively movable for variable spacing and carrying a printing cylinder, a counterimpression cylinder and an inking roller respectively mounted for rotation and parallel to each other, a spindle connecting the three wall units and extending parallel to a line perpendicular to the axes of the printing cylinder and the counterimpression cylinder, nuts on two of the wall units cooperating with threaded portions of the spindle, the nuts being driven individually for spacing adjustment between the wall units and being held stationary while the spindle is rotated for simultaneous variation of the spacing.

3,635,161
FOUNTAIN DIVIDER
Dale D. Leanna, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Filed Nov. 4, 1969, Ser. No. 873,878
Int. Cl. B41f *31/06*
U.S. Cl. 101—364 **3 Claims**



A fountain divider for separating different color inks in printing presses, the divider having a magnet which holds it in place in the trough of the ink fountain system.

3,635,162
PRACTICE BOMB
Carl W. Lohkamp, Scotland, and James E. Short, Jr., Switz City, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 9, 1970, Ser. No. 53,609
Int. Cl. F42b *25/18*
U.S. Cl. 102—7.6 **4 Claims**

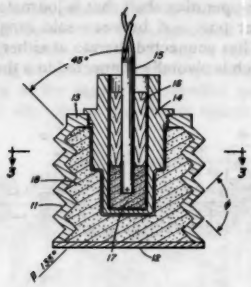


A practice bomb having a signal cartridge for locating the point of impact of said practice bomb after an airdrop and having means for arming the practice bomb during flight of said practice bomb by actuation of an arming pin connected to foldable fins which open upon high velocity of said practice bomb.

3,635,163
ANTIPERSONNEL ORDNANCE DEVICE
Vasil Philipchuk, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 29, 1964, Ser. No. 379,055
Int. Cl. F42b *3/08*
U.S. Cl. 102—64 **6 Claims**

1. A casing for an ordnance device comprising:
a wall having a substantially uniform thickness;

said wall being comprised of generally linear interconnected, angularly disposed sections forming a corrugation configuration; and



said corrugations being disposed transverse to the longitudinal axis of the casing.

3,635,164

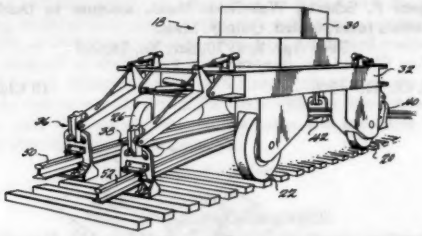
RAIL-TRANSPOSING MACHINE

Robert W. Patton, 537 Shaw St., Barboursville, W. Va.

Filed Dec. 29, 1969, Ser. No. 888,744

Int. Cl. E01b *29/16*

U.S. Cl. 104—1 **3 Claims**



A method and apparatus for transposing a pair of railroad rails. In the embodiment of the invention described below, a self-propelled rail-transposing machine having a pair of rail threader eyes at both the front and rear of the machine is provided, with the two rails being threaded through these four eyes so that they cross beneath the machine. Hydraulic cylinders are preferably included for moving the eyes vertically and horizontally and for individually tilting the threader eyes to twist the rails so that, on double-shoulder tie plates, the rails will come over the shoulder when spikes are pulled only on one side of the rail. Further, a hydraulic clamp and thrust jack is provided on the machine for moving up to a quarter mile or so of a rail along its length in either direction to realign transposed rails having staggered joints.

ERRATUM

For Class 104—56 see:
Patent No. 3,635,185

3,635,165

MACHINE FOR WELDING RAILS IN THE TRACK

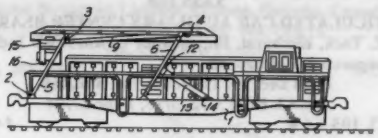
Vladimir Ivanovich Platov, Novo-Basmannaya ulitsa, 4/6, kv. 272, and Sergei Mikhailovich Kozlov, Oxkaya ulitsa, 48/2, kv. 82, both of Moscow, U.S.S.R.

Filed Oct. 27, 1969, Ser. No. 869,761

Int. Cl. E01b *31/02*

U.S. Cl. 104—15 **7 Claims**

A machine for welding rails of a track comprises a moving platform on which are mounted at least two frames with uprights pivotably connected to crossbeams. These frames are mounted on ball joints on the platform so as to be capable of swinging in the direction of platform movement, as



well as in transverse directions. The crossbeams of the frames are rigidly interconnected by longitudinal beams which slidably carry electric hoists and welding units.

3,635,166

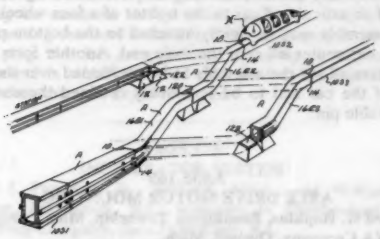
ROUTE-CHANGING DEVICE ESPECIALLY FOR A SUPPORTED-TYPE MONORAIL SYSTEM

Billy L. Peterson, 5305 North Sheridan Blvd. Space 119, Arvada, Colo.

Filed June 23, 1970, Ser. No. 49,014

Int. Cl. E01b *25/12*

U.S. Cl. 104—130 **6 Claims**



The route-changing system includes curved running surface members connected to devices capable of rotating each 180° about the protrusion of the longitudinal axis from one end thereof to switch running surface and change the particular running surface member from one that curves to the right to one that curves to the left, and vice versa. The running surface members are supported upon piers.

3,635,167

ROTARY LITHOGRAPHIC PRESS WITH DRIVE FOR PRESS ROLLS

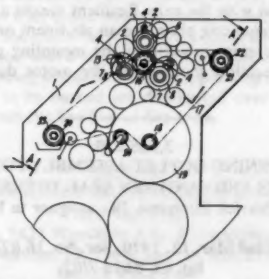
Josef Jurny, No. 40 Hlavni, Sebranice, and Arnost Cerny, No. 82 Sadova, Blansko, both of Czechoslovakia

Filed Sept. 30, 1969, Ser. No. 862,302

Claims priority, application Czechoslovakia, Oct. 4, 1968, PV 6885/68

Int. Cl. B41f *7/02*

U.S. Cl. 101—142 **7 Claims**



An offset printing machine having a drive mechanism for the plate cylinder and rolls comprising a sprocket and chain

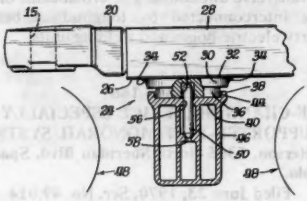
mechanism for conjointly rotating the parts. The distributor rolls including means for axial reciprocation.

3,635,168

ARTICULATED CAR AUXILIARY CENTER BEARING

Carl E. Tack, Elmhurst, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 19, 1969, Ser. No. 886,466
Int. Cl. B61f *3/12, 5/16;* F16c *17/04*
U.S. Cl. 105—4 R 4 Claims



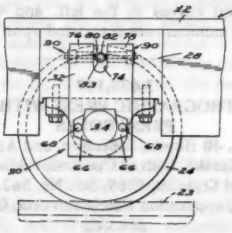
An auxiliary center plate assembly for attaching the male end of an articulated car to the bolster of a four-wheel truck. The assembly may be rigidly attached to the bottom portion of the car center sill near the male end. Another form of the invention allows the assembly to be positioned over the male end of the car and to be removably retained thereon by a removable pin.

3,635,169

AXLE DRIVE MOTOR MOUNTING

Richard G. Hopkins, Bennington Township, Mich., assignor to MWA Company, Owosso, Mich.

Filed Mar. 12, 1970, Ser. No. 18,908
Int. Cl. B61f *5/26;* B24b *47/02;* B23d *7/10*
U.S. Cl. 105—133 12 Claims



A motor drive for a carriage comprising a mounting plate journaled on an axle of the carriage and a reversible motor secured to said mounting plate. The motor has a direct driving connection with the axle. Resilient means are interposed between the mounting plate and an abutment on the carriage to yieldably oppose rotation of the mounting plate and absorb initial reaction shock upon the motor during reversal thereof.

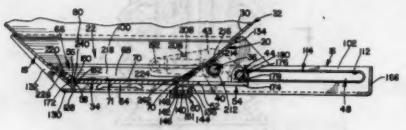
3,635,170

QUICK-OPENING OUTLET ASSEMBLY FOR HOPPER CARS AND SANITARY SEAL THEREFOR

Osvaldo F. Chierici, Elmhurst, Ill., assignor to Holland Company

Filed Mar. 12, 1970, Ser. No. 18,872
Int. Cl. B61d *7/02*
U.S. Cl. 105—282 12 Claims

An outlet assembly for application to hoppers of railroad hopper cars and the like in the form of a frame made up of spaced pairs of longitudinal and transverse frame members joined together and shaped to define a continuation of the hopper car sheets, and slidably mounting a gate for movement between open and closed positions, in which the gate is actuated by an operating shaft that is journaled adjacent the assembly outlet port and between said longitudinal frame members, and has connected thereto at either end of same a crank arm which is pivotally connected to a thrust arm that is



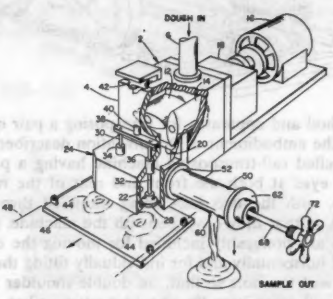
in turn connected to a slide bar extending between and slidably mounted in opposed guide slots formed in the longitudinal members. The gate-opening mechanism is arranged for full open and closed positioning of the gate in 180° of movement of the operating shaft, and the assembly is equipped with a sanitary top seal arranged to permit the lading when present to help provide the sealing action at the gate.

3,635,171

CONTINUOUS DOUGHNUT-MAKING MACHINE

Eugene P. Schertz, Wakefield, Mass., assignor to Dunkin' Donuts Incorporated, Quincy, Mass.

Filed Apr. 8, 1970, Ser. No. 26,684
Int. Cl. A21c *11/16*
U.S. Cl. 425—200 10 Claims



In a continuous doughnut-making apparatus including a dough developer, a pump for forwarding dough-making ingredients to and through the developer and a depositor for receiving developed dough from the developer and forming it into doughnut form, a device is provided for withdrawing samples of developed dough from the apparatus for example for testing or for use in making speciality items, the device providing the samples without interference with the normal operation of the apparatus and being arranged to return all unused dough to the apparatus when sampling is completed.

3,635,172

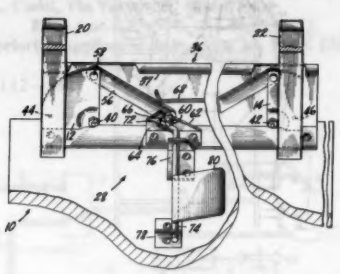
TABLE WITH FOLDING LEGS

William P. De Saussure, and William P. De Saussure, III, both of Englewood, N.J.

Filed Oct. 15, 1969, Ser. No. 866,576
Int. Cl. A47b *3/091*
U.S. Cl. 108—129 3 Claims

A table with folding legs, each leg having a supporting member operable with a locking mechanism for retaining the

leg in an extended and retracted position and each locking mechanism having a releasing device for disengaging the supporting member in order to retract the leg. The supporting member for each leg is pivotally connected to its respective leg at one end and has mounted at its other end detent means which engages a cam surface that is provided with a recess to receive the detent means to lock the leg in an extended position. A leaf spring maintains the detent means in contact with the cam surface as the supporting member moves with the folding leg and also retains the detent means in the recess



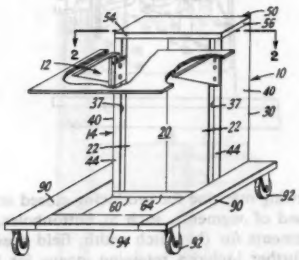
when the leg is in a locked position. The releasing mechanism upon actuation lifts the detent means from the cam recess in opposition to the force applied by the leaf spring and allows the leg to be manually folded with the leaf spring remaining in contact with the supporting member to provide a retaining force to keep the leg in a folded position. For tables of normal height and of lengths less than 60 inches the legs are mounted such that for each pair of legs one leg will be folded one on top of the other with the first leg lying flush with the underportion of the table and the other leg lying directly on top of the first leg.

3,635,173

SELF-LEVELING DISPENSER

Napoleon H. Ruben, Tilburg, Holstof, Netherlands, assignor to AMF Incorporated

Filed Mar. 30, 1970, Ser. No. 23,713
Claims priority, application Great Britain, June 18, 1969, 30,860/69
Int. Cl. A47b 9/02
U.S. Cl. 108—136 **1 Claim**



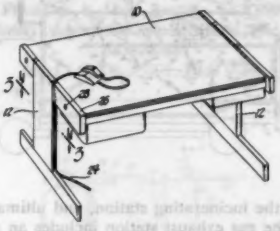
A self-leveling storing and dispensing device which includes a horizontally oriented platform carriage which is directly connected, via a plurality of tension springs, to the upper end of an upright housing for carrying a workpiece load at a predetermined level. The carriage is guided by the housing in a vertical path of travel as the springs expand and contract in response to the workpiece being respectively loaded on the platform and removed therefrom.

3,635,174

DESK WITH HIDDEN WIRING

Douglas C. Ball, Senneville, Quebec, and John W. Neufeld, Mississauga, Ontario, both of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed Sept. 14, 1970, Ser. No. 72,055
Int. Cl. A47b 13/02
U.S. Cl. 108—150 **6 Claims**



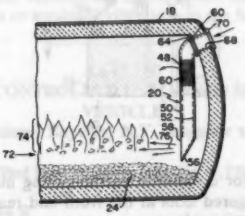
A desk provided with a vertical flat pedestal supporting one end of the top has a wiring channel formed in an edge of the pedestal. A nose molding closes the channel normally, but may be removed to lay in an appliance cord without disconnecting the cord from either the appliance or its connector plug. Notches are provided at the top and bottom of the channel in which the cord may be laid for ingress and egress when the nose cap is replaced.

3,635,175

INCINERATOR SYSTEM

Russell I. Peterson, Jr., Seekonk, Mass., and William E. Sauter, Barrington, R.I., assignors to Cumberland Engineering Company, Inc., Pawtucket, R.I.

Filed June 8, 1970, Ser. No. 44,081
Int. Cl. F23g 7/00
U.S. Cl. 110—8 R **6 Claims**



The invention is an improved incinerator system including an improved manner of feeding the incinerator with the products to be burned and air. Both the air and products are fed through an inlet chute with the product discharging from the bottom of the chute laterally across the fire bed of the incinerator proper, with a large proportion of the air conveying the products being exhausted at the upper end of the chute. The products to be burned are distributed over the fire bed but below or into the fire line or fire zone.

3,635,176

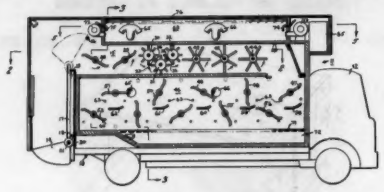
MOBILE TRASH-COLLECTING AND INCINERATING APPARATUS

Louis Gottlieb, 7421 Woodbine Ave., Philadelphia, Pa.

Filed Dec. 29, 1969, Ser. No. 888,223
Int. Cl. F23g 5/04
U.S. Cl. 110—8 A **11 Claims**

A mobile device including a station for loading refuse, a station for physically reducing the refuse received from the

loading station into smaller segments, a station for incinerating the reduced refuse, an ash station to receive the ashen remains of the incinerated refuse and a gas-exhaust station to carry off the hot gases emanating from the incinerating station. A plurality of rotary feeders are provided which move the refuse from the loading station, through the reducing station, through the incinerating station, and ultimately to the ash station. The gas exhaust station includes an afterburner to burn any incompletely combusted material which may rise with the hot gases from the incinerating station, and includes in addition a filter to thoroughly cleanse the hot gases before they are exhausted into the atmosphere.

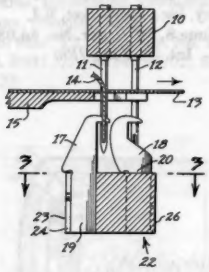


3,635,177

NARROW GAUGE HOOK BAR FOR TUFTING MACHINE

Larry P. Gable, and Clyde H. Langley, both of Dalton, Ga., assignors to Card & Co., Inc., Chattanooga, Tenn.

Filed Sept. 22, 1970, Ser. No. 74,378
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 R **4 Claims**



A hook bar for a multiple needle-tufting machine having alternating staggered slots in the front and rear faces of the hook bar for receiving loopers in a narrow gauge.

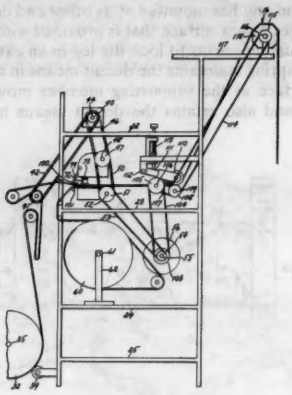
3,635,178

MACHINE FOR MAKING SHIRRED CURTAINS

Stanley Levinstein, Woodmere, and Edward J. Lepow, Far Rockaway, both of N.Y., assignors to Home Curtain Corporation, Rockaway, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,411
Int. Cl. D05b *35/08*
U.S. Cl. 112—132 **1 Claim**

A device for simultaneously shirring and sewing a plurality of parallel areas on a continuous web of material to create a permanently shirred effect. The shirred areas are sewn in such condition to tapes disposed therebeneath which are fed to a point of stitching in the device at a slightly slower speed than that of the curtain web itself. Shirring is accomplished by means of a pivotally mounted arm having a claw at a lower end thereof which pushes fabric comprising the web beneath the presser foot of the sewing mechanism during the period in which the needles are in relatively elevated position. Upon withdrawal of the claw, the shirred portions are maintained in this condition by a presser foot until interconnected to the backing strip. The shirred curtain is formed as a continuous panel, to be subsequently cut into desired lengths, and joined and hemmed as required.

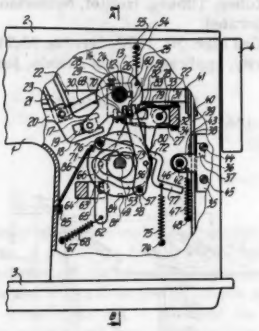


3,635,179

ZIGZAG SEWING MACHINE FOR PRODUCING CLOSED SEWING PATTERNS, PARTICULARLY BUTTONHOLES

Odette Ueltschi, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina Nahmaschinenfabrik, Steckborn, Switzerland

Filed Mar. 19, 1970, Ser. No. 21,037
Claims priority, application Switzerland, Mar. 21, 1969, 4442/69
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 B **2 Claims**



A zigzag sewing machine for producing closed sewing patterns composed of segments, such as buttonholes, includes regulating elements for the stitch width, field position, and length, and further includes retaining means for the stitch width and stitch field settings. A manually operable switch element controls the regulating elements through transmission means, such as levers, in accordance with the sewing course. The switching element is movable from an inoperative rest position into successive control positions each corresponding to a respective segment. Detent means releasably latch the switching element in each of its positions, and cams on the switching element control levers and the like in such manner that, when the switching element is moved from the inoperative position to the control position for sewing the ini-

tial segment of the pattern, all of the regulating elements which control the sewing pattern are moved into the starting position for sewing the closed sewing pattern. These regulating elements may be adjusted to their proper settings in advance of starting of the sewing operation.

3,635,180

TIMING DEVICE FOR SYNCHRONIZING THE SLACKENING OF THE NEEDLE-THREAD AND THREAD-SEVERING WITH TIMING OF THE TENSION-SLACKENING FOR OVERCAST SEWING MACHINES

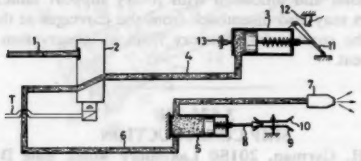
Cesare L. Conti, Via Varese 18, Milan, Italy

Filed Apr. 17, 1970, Ser. No. 29,621

Claims priority, application Italy, Apr. 23, 1969, 15883 A/69

Int. Cl. D05b *65/00*

U.S. Cl. 112—252 **9 Claims**



A device is disclosed for synchronizing the slackening of the needle-thread tension with the cutting of the thread in a sewing machine, especially a sewing machine of the overcast stitch type. The device comprises a pneumatic assembly controlled by magnetic valves and a characteristic pneumatic delay mechanism is provided in order to provide an exceptionally accurate adjustment of the time during which the discs of the thread-tensioning device are kept open. The whole assembly is constructionally simple and cheap and is fully reliable in service.

3,635,181

TRANSPORTABLE FLOATING BOARD FOR SPORT BOATS OR THE LIKE

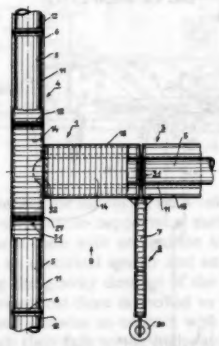
Paul Epple, and Magdalena Kruse, both of Haus Nr. 119, Bodman (Bodensee), Germany

Filed Oct. 8, 1969, Ser. No. 864,623

Claims priority, application Germany, Oct. 8, 1968, P 18 01 694.9

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 F **9 Claims**



A transportable floating body for sport boats or the like, which comprises a floating member stabilized and formed of pipe means in form of an extended at least single T. The floating member includes rigidly secured profile frames rigidly secured spaced apart from each other, and triangular arms are applicable on both sides of the profile frames. The profile frames serve the reception of running boards.

3,635,182

DAMPING ARRANGEMENTS

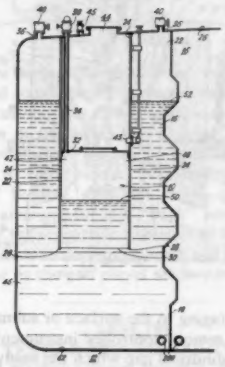
James Arthur Haines Paffett, Feltham, England, assignor to National Research Development Corporation, London, England

Filed Dec. 9, 1969, Ser. No. 883,390

Claims priority, application Great Britain, Dec. 10, 1968, 58,600/68

Int. Cl. B63b *35/00;* **F16f** *9/08*

U.S. Cl. 114—0.5 **14 Claims**



A method of damping vibrations in the hull of a floating vessel by transferring vibrational energy from the hull to a liquid-gas system within the hull, the vibrational energy being absorbed within the system by compression and expansion of the gas by the liquid and finally dissipated by friction in the liquid-gas system. Assemblies are disclosed for damping vertical, transverse or torsional vibrations in the hull.

3,635,183

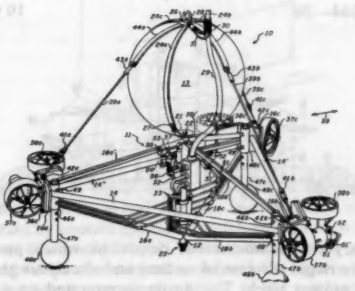
REMOTELY CONTROLLED UNMANNED SUBMERSIBLE VEHICLE

Gerald R. Keatinge, Bayville, N.Y., assignor to Sperry Rand Corporation

Filed Feb. 9, 1970, Ser. No. 9,759

Int. Cl. B63g *8/00*

U.S. Cl. 114—16 R **9 Claims**



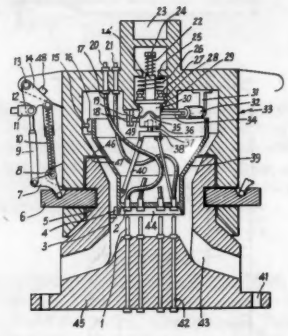
A remotely controlled submersible vehicle having a rigid truss framework suspended from a flotation sphere, three horizontally disposed members of the truss framework being

arranged to form a triangular assembly about a vertically oriented center post affixed to the sphere. Thrusters affixed to the corners of the triangular assembly provide for translational and rotational control of the vehicle.

3,635,184
UNDERWATER CONNECTOR

Jean Liautaud, Paris, France, assignor to Entreprise de Recherches et D'Activites Petroliers (ELF), Paris, France

Filed June 15, 1970, Ser. No. 46,200
Claims priority, application France, June 18, 1969, 6920362
Int. Cl. B63c 7/02
U.S. Cl. 114—51 **7 Claims**

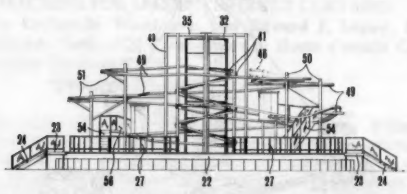


A device for bringing to the surface or submerging a metal object containing remote-controlled instruments, and consisting of a mobile cylindrical cap which fits easily onto an inner component which also revolves, the cup being connected to a cable by a threaded section and the other unit being attached to the object to be submerged or raised, with bolting devices forming part of the cup fitting into slots in the inner component when the edge of the said cup is resting on the upper edge of the inner component and the two components are positioned correctly in relation to each other, the bolting devices being pushed into the slots by the operation of a jack which causes a bellcrank lever to pivot on a fixed axis, the upper end of the said jack being connected to another bellcrank lever which can pivot on a second fixed axis, and which, when at rest, is held against a block by means of a spring.

3,635,185
ROTARY DRIVING AMUSEMENT EQUIPMENT

Masayoshi Kojima, Osaka-fu, Japan, assignor to Sanseiyusoki Co., Ltd., Osaka, Japan

Filed Jan. 9, 1970, Ser. No. 1,778
Int. Cl. A63g 21/10
U.S. Cl. 104—56 **10 Claims**

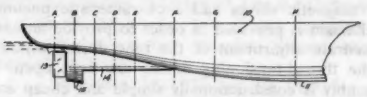


A rotary-driven amusement device in which passenger bearing carriages traverse an endless and circuitous generally spiraling railway track. The device is mounted on a rotary support table and has a portion of the endless track disposed in an upwardly spiraling fashion at the center of the rotary table and up which the carriages are traversed by engagement of the carriages with peripheral portions of a concentrically inwardly disposed vertically oriented, reellike pushing frame, responsive to relative rotation between the rotary table-mounted track and the pushing frame. The pushing frame is preferably also mounted on the rotary table and is driven at variable speeds in an opposite direction to the table rotation, although the pushing frame in a different embodiment may be mounted stationary to a separate base or to the ground while the table is made to rotate relative thereto. The endless railway further includes a generally downwardly spiraling more outwardly disposed undulating and irregularly circuitous portion which interconnects with the top and bottom of the aforementioned centrally disposed upwardly spiraling portion. The table in operation is usually continuously rotating and has a selectively stop and start annular rotary passenger loading-unloading walkway disposed outwardly concentric with the rotary table. The rotary walkway is selectively rotatable to synchronize its speed and its access and discharge gates thereon, with those corresponding thereto on the rotary table so that the passengers may be safely loaded and unloaded with rotary support table. The passengers may also disembark from the carriages at the top to view the surrounding scenery from an observation platform thereat.

3,635,186
SHIP CONSTRUCTION

William H. German, 20180 Lakeshore Road, Baie D'Urfe, Quebec, Canada

Filed Feb. 25, 1970, Ser. No. 14,077
Int. Cl. B63b 1/08
U.S. Cl. 114—57 **12 Claims**

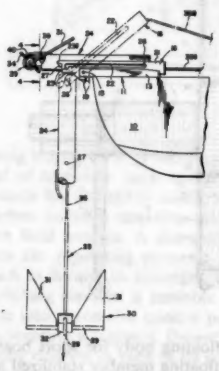


A hull designed to afford additional protection to the ship's screw or screws and rudder or rudders against damage by floating or sheet ice, the hull having a flat bottom midship section and a buttock flow stern section. A closed annular nozzle closely and coaxially surrounds each screw and a skeg projects downwardly on each side of the hull, each skeg being a forwardly extending streamline continuation of an outboard rim of a nozzle.

3,635,187
ANCHOR CARRIER AND GUIDE

James E. Webb, 16031 Market St., Channelview, Tex.

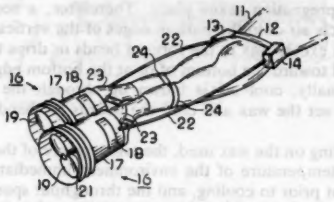
Filed July 6, 1970, Ser. No. 52,261
Int. Cl. B63b 21/22
U.S. Cl. 114—210 **10 Claims**



The device serves to position a retrieved anchor on a base mounted on the bow of the boat. It is primarily adapted to an anchor whose fluked yoke is pivoted to its shank and can

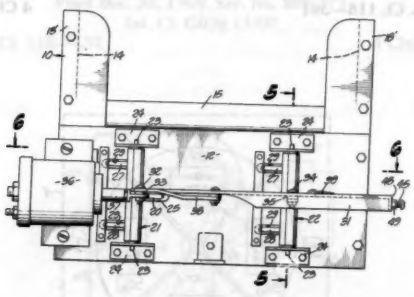
swing through an angle on each side of the shank. As the anchor passes boat during dropping or retrieving it, the flukes should obviously point away from the boat. The device achieves this end, and also maintains the fully retrieved anchor so balanced that it will begin its descent into the water upon slackening the line attached to it.

3,635,188
UNDERWATER PROPULSION DEVICE
Joseph Rutkowski, 4345 Stacey Pl., San Diego, Calif.
Filed Aug. 8, 1969, Ser. No. 848,443
Int. Cl. A63c *11/10*; B63b *35/00*
U.S. Cl. 115—6.1 **6 Claims**



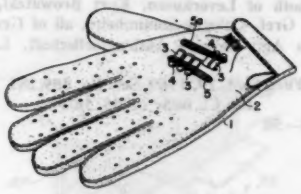
An underwater propulsion device having a separate housing carrying a propulsion motor and a propeller adapted to be attached to a swimmer's foot as by a shoe with power units, such as batteries or compressed gas carried by the swimmer and carrying a plurality of annular flotation rings around the periphery of the housing; the housing being hingedly attached to the swimmer's shoe for allowing the swimmer to walk on the ocean bottom or other surfaces.

3,635,189
FLARE DISPENSER
Lawrence C. Whittemore, 19641 Waterbury Ln., Huntington Beach, Calif.
Filed Mar. 26, 1970, Ser. No. 22,983
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **9 Claims**



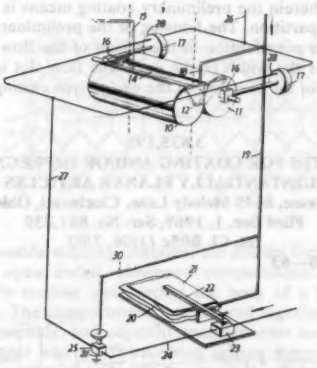
A flare dispenser for mounting on a vehicle such as an automobile or motorcycle supports a stack of conventional cylindrical flares each with an ignition tip at one end. The dispenser has an electrical igniter and an electrical solenoid for controlling the gravity descent of the flares in the stack, so that the lowermost flare is moved to a lowered position and then moved endwise to contact with the igniter to light the flare, which then falls to the highway. A wind deflection shield mounted on the vehicle in advance of the flare dispenser forms a pocket of relatively calm air into which the lighted flare falls. Remote controls on the vehicle operate the solenoid and the igniter, so that the flares may be ignited and dropped one at a time at desired intervals, while the vehicle is moving.

3,635,190
GOLF GLOVE HAVING A SWING COUNTER
Masae Araki, No. 25-1, Yushima 2-chome, Bunkyo-ku, Tokyo, Japan
Filed Dec. 4, 1970, Ser. No. 95,062
Int. Cl. A63b *71/06*
U.S. Cl. 116—120 **8 Claims**



A golf glove having a swing counter, comprising a plurality of flexible and tough counting strips arranged side-by-side in a row and secured at one end to the external surface of the "back" portion of the glove, each having a beltlike fastener portion formed on each side, so that the strips may be bent at said one end to either side to be adheringly engaged by the two rows of holding members made of similar fastener material and arranged on said "back" portion on both sides of said row of the respective one ends of the strips in spaced relation therefrom to thereby indicate and record the number of swings done by the golf player who wears this glove.

3,635,191
TEXTILE PROCESS CONTROL
James Donald Mackay Gibson, Bramley, Leeds, England, assignor to I. W. S. Nominee Company Limited, London, England
Filed Feb. 6, 1969, Ser. No. 796,978
Claims priority, application Great Britain, Feb. 7, 1968, 6,095/68
Int. Cl. B05c *11/10*
U.S. Cl. 118—7 **2 Claims**



The level of liquid in the reservoir of impregnation apparatus, such as a pad mangle, is maintained substantially constant by control apparatus which includes a probe responsive to the level of liquid in the reservoir and producing a signal in dependence upon such level, the signal used to regulate the squeeze pressure applied to the material being impregnated. In one construction, the probe is a tube having one end open and located below the liquid level. Air is passed continuously through the tube and the back pressure set up constitutes the signal. This air pressure is transmitted

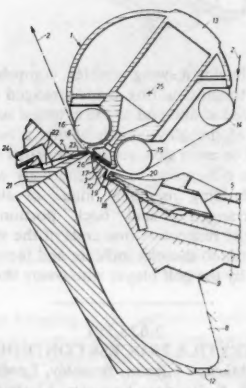
to a pneumatic actuator operating a regulator valve, which controls the compressed air supply to pneumatic actuators responsible for the pressure on the nip of the mangle.

3,635,192

MEANS FOR COATING FOILS, TAPES AND THE LIKE

Peter Herzhoff; Stephan Platz, both of Leverkusen; Fritz Maus, Cologne-Flittard; Wolfgang Schweicher; Willi Wasser, both of Leverkusen; Kurt Browatzki, Opladen, and Hans Gref, Cologne-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 19, 1969, Ser. No. 859,281
Int. Cl. B05c *11/06, 5/02*
U.S. Cl. 118—50 **7 Claims**



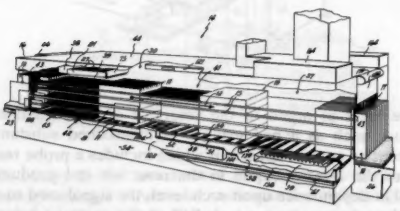
An apparatus for coating foils, tapes with viscous solutions, comprising a guide member for the support to be coated, a wedge-type casting device as preliminary coating means and a striplike partition in the direction of movement of the support, forming a gap with a support extending over the width of the web. That partition now is serving as final coating means and is arranged between two chambers at different pressure, wherein the preliminary coating means is arranged just before partition. The housing of the preliminary coating means has a construction in the region of the flow slots extending over the width of the web. The flow slot is open in the vicinity of the overflow of the wedge-type casting device.

3,635,193

APPARATUS FOR COATING AND/OR IMPREGNATING SUBSTANTIALLY PLANAR ARTICLES

Ralph E. Stease, 8649 Melody Lane, Cincinnati, Ohio

Filed Dec. 1, 1969, Ser. No. 881,239
Int. Cl. B05c *11/06, 7/02*
U.S. Cl. 118—63 **9 Claims**



A method and apparatus particularly adapted for impregnating corrugated paperboard with wax, the percentage wax pickup being variable within limits as desired. In operation, a plurality of boards is vertically positioned side-by-side, but slightly separated one from the other, into separate lines of travel. The group of vertically positioned boards is then passed underneath a free-falling, unrestrained cascade of molten wax at a controlled rate to obtain complete flooding or coating of all exterior board surfaces. The cascade is developed in a plane transverse to the boards' lines of travel. Such flooding also occurs within the boards' flutes if the flutes are vertical as the boards pass trough the cascade. A first air knife then directs hot air onto the top edges of the vertical boards to remove excess wax from the exterior faces or liners of the boards, as well as from the boards' interior if the corrugations or flutes are also vertical. The boards then move through a temperature-controlled conditioning section the section being maintained at an elevated temperature, where impregnation takes place. Thereafter, a second air knife directs air onto the bottom edges of the vertical boards to remove excess wax in the form of beads or drips that may be formed toward the bottom of or at the bottom edge of the board. Finally, cool air is blown up through the vertical boards to set the wax and cool the boards for handling and stacking.

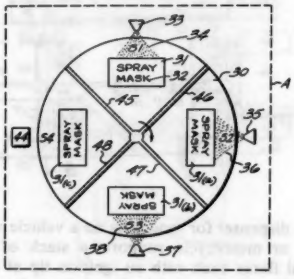
Depending on the wax used, the temperature of the molten wax, the temperature of the environment immediately after waxing but prior to cooling, and the throughput speed of the board, the board will be either dry waxed or wet waxed. The wax pickup percentage of the boards is controlled mainly by varying wax temperature and board exposure time in the wax-flooding step. The wax distribution in the board is controlled mainly by varying environment temperature and board exposure time in the conditioning step. Thus, the method and apparatus can be controlled to obtain either dry-waxed or wet-waxed paperboard at a desired wax pickup level.

3,635,194

HIGH-PRODUCTION MACHINE UTILIZING SPRAY MASKS

William L. Prior, Newark, Ohio, assignor to Vychem, Inc., Columbus, Ohio

Original application Oct. 31, 1967, Ser. No. 679,445, now Patent No. 3,531,311, dated Sept. 29, 1970. Divided and this application Aug. 15, 1969, Ser. No. 870,970
Int. Cl. B05b *15/04*
U.S. Cl. 118—301 **4 Claims**



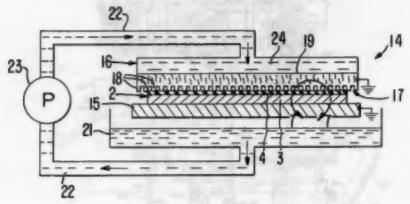
Apparatus for spray coating a substrate through a masking means. Means are provided for moving a mask from a station in which the substrate is sprayed through the mask, to a station having hot water spray means for cleaning and heating the mask, to a station for applying a coating solution to the mask, to a station for drying the mask, and finally back to the substrate-coating station.

3,635,195

METHOD AND APPARATUS FOR PRODUCING HALFTONE ELECTROGRAPHIC PRINTS

Raymond L. Levy, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 15, 1969, Ser. No. 857,979
Int. Cl. G03g 13/00
U.S. Cl. 118—637 3 Claims



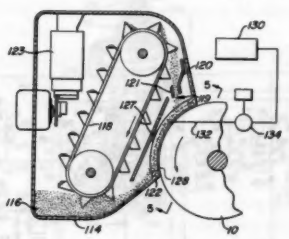
Method and apparatus are disclosed for producing halftone electrographic prints from continuous tone charge image patterns deposited on the charge-retentive surface of an electrographic recording medium. The continuous tone image patterns are developed in the halftone rendition by developing the charge image pattern in the presence of a closely spaced development electrode having a development surface, facing the charge image pattern to be developed, constituted of an array of projections in the form of a halftone screen pattern. The projections concentrate the electric field over the surface of the continuous tone charge image pattern into a halftone image pattern which is developed by the pigment particles of the electroscopic ink used for developing the charge image patterns.

3,635,196

PNEUMATICALLY CONTROLLED SEAL

George N. Tsilibes, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,271
Int. Cl. G03g 13/00
U.S. Cl. 118—637 4 Claims



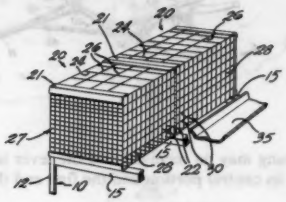
Seal structure for xerographic developer apparatus. The development apparatus contemplated is of the type commonly referred to as a cascade development system wherein fine developer particles are moved in an upwardly direction and allowed to fall or be cascaded onto a xerographic surface and subsequently returned to the developer sump. The seal is characterized by being inflatable in order to block the space between the housing structure and the recording surface, after movement of the recording surface has commenced.

3,635,197

CONTAINERIZED PRODUCTION OF POULTRY

Robert L. Van Huis, Zealand, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 786,177, Dec. 23, 1968, Original application May 23, 1969, Ser. No. 827,220. Divided and this application Mar. 26, 1970, Ser. No. 30,610
Int. Cl. A01k 31/00
U.S. Cl. 119—17 4 Claims



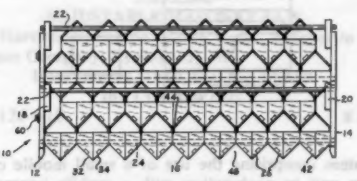
A method for the containerized production of poultry wherein within the same cage poultry is transported from the hatchery, raised from a chick to a grown bird (either layers or broilers) and transported to the processor or egg-producing farm. Preferably the cage utilized in the process has two adjacent feeding sides formed by a mesh of two different sized openings. The cage is rotated 90° when the chicks reach a certain age, so as to retain the chicks for their entire growth, allowing the cage to be shipped with and without birds from hatchery to grower to processor, and back to the hatchery respectively. An adjustable feed trough sidewall extension allows the trough to be enlarged as the birds grow.

3,635,198

SHIPPING CONTAINER FOR POULTRY

William R. Morgan, Jr., R.F.D. #2, Box 70, Hurlock, Md.

Filed Dec. 10, 1969, Ser. No. 883,689
Int. Cl. A01k 37/00
U.S. Cl. 119—19 13 Claims



The nestable shipping container for poultry includes a plurality of open ended, elongated compartments formed to completely enclose and support the body of a bird during shipment. The compartments are secured together to form a unitary assembly, and adjacent compartments are shaped to define upper and lower receiving spaces therebetween to receive a portion of an overlying or underlying compartment.

3,635,199

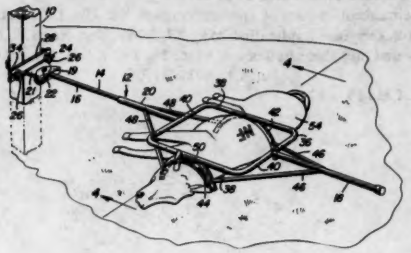
ANIMAL TEMPORARY HOLDDOWN DEVICE

Neal R. Fortney, Broadview, Mont.

Filed Dec. 12, 1969, Ser. No. 884,522
Int. Cl. A61d 03/00
U.S. Cl. 119—96 14 Claims

An elongated lever including structure at a first end for universal support from a stationary support and structure at the other end defining a handle. Further, the lever includes a central portion provided with animal body-embracing struc-

ture defining a recess opening outwardly of one side of the lever into which an animal body toward which the central

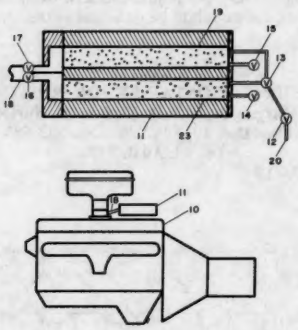


portion is swung may be received and the lever is extendible intermediate its central portion and the first end thereof.

3,635,200
HYDROCARBON CONVERSION PROCESS AND APPARATUS

Clark Ace Rundell, Wheaton; Heyman Clarke Duecker, Ellicott City, and Carl Vance McDaniel, Laurel, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,386
Int. Cl. F02b *43/08*
U.S. Cl. 123—3 **9 Claims**



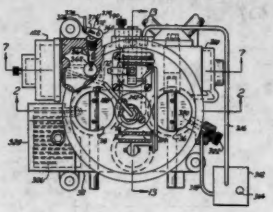
A system comprising the use of a small mobile catalytic cracking unit in conjunction with a mobile internal combustion engine. The cracking unit is used to treat the fuel for use in the engine.

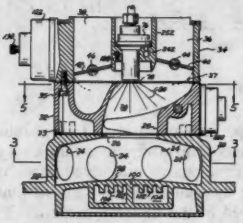
3,635,201
PRESSURE CARBURETION SYSTEM FOR MANIFOLD DISTRIBUTION

Carl F. High, 17581 Appolini, Detroit, Mich.

Filed Sept. 12, 1969, Ser. No. 857,415
Int. Cl. F02m *29/06, 7/18*
U.S. Cl. 123—130 **5 Claims**

A charge-forming system for an internal combustion engine in which a pressure carburetor incorporates a whirl-type mixing chamber disposed immediately upstream of the intake manifold inlet. A pair of parallel cylindrical air inlet ducts, each having a mechanically operated throttle valve therein, are disposed immediately upstream of the mixing chamber for controlling air induction thereto. A fuel nozzle supported intermediate the two air inlet ducts sprays a metered supply of atomized fuel into the mixing chamber, where the spray is mixed with the air from the air inlet ducts and the mixture then discharged into the intake manifold. The fuel-air mixture entering the intake manifold impinges surface heated by the engine exhaust gases to aid in the vaporization of the fuel. The fuel to the fuel nozzle is pressure-varied relative to



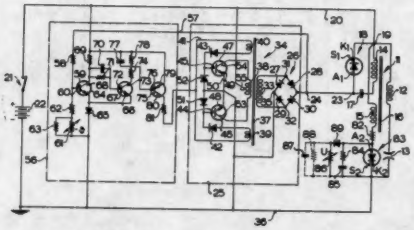


manifold pressure and mechanically metered relative to air throttle operation. A manually operated fuel shutoff and a manifold pressure controlled idle stop are also provided. A controlled charge of water is injected into the fuel-air mixture by a spray jet operated from engine exhaust gas pressure relative to manifold pressure changes.

3,635,202
IGNITION ARRANGEMENTS FOR INTERNAL COMBUSTION ENGINES

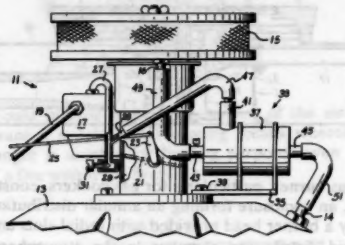
Jorg Issler, Stuttgart; Gerd Hohne, Ludwigsburg; Gert Strelow, and Helmut Roth, both of Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 18, 1970, Ser. No. 47,510
Claims priority, application Germany, June 20, 1969, P 19 31 236.8
Int. Cl. F02p *3/02, 3/06*
U.S. Cl. 123—148 E **35 Claims**



A thyristor connected in circuit with the ignition capacitor is triggered to permit the capacitor to discharge at the same that a thyristor opening switch is turned off. Separate transistor circuits for triggering each of the thyristors are controlled by the operation of the engine-operated circuit interrupter.

3,635,203
ANTIDIESELING DEVICE FOR INTERNAL COMBUSTION ENGINES
Thomas E. Gannoe, Warren, Pa., assignor to Sylvania Electric Products Inc.
Filed July 27, 1970, Ser. No. 58,392
Int. Cl. F02m 7/06, 7/00; F02d 31/00
U.S. Cl. 123—198 D 6 Claims



An automatic device and method to prevent dieseling from occurring within an internal combustion engine after ignition shutoff by introducing a sudden stream of air onto the idle fuel chamber of the engine's carburetor, thereby producing a "lean" fuel mixture, making it unable to burn within the engine.

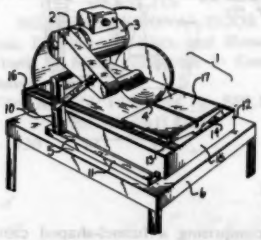
3,635,204
SPRING DEVICE FOR ROTATING AND LAUNCHING A PROJECTILE
Joseph H. Plumb, Jr., Hartford St., Dover, Mass.
Filed July 17, 1969, Ser. No. 842,517
Int. Cl. F41b 7/00
U.S. Cl. 124—16 12 Claims

A discoid target launcher. A hand-held trap employs a spring-loaded shaft mounted for limited sliding movement within an upstanding pipe and carrying a platform at its upper end. During launching, the shaft and platform are impelled by the spring and are simultaneously rotated. This propels the target from the platform vertically into the air with no appreciable recoil or shock and imparts a stabilizing spin to the target solely through frictional engagement between the rotating platform and the target.

3,635,205
SPRING-LOADED BOW
Brian Wood, 414 E. Harry St., Hazel Park, Mich.
Filed Mar. 20, 1970, Ser. No. 21,354
Int. Cl. F41b 5/00
U.S. Cl. 124—24 11 Claims

Archery bow having bow limbs that are detachably connected to a handle. In the handle there are limb vibration-dampening springs positioned at each end of the handle to biasingly engage the ends of the bow limbs. The bow limbs are rotatably mounted with respect to the handle and there is a locking device on the handle that rocks the bow limbs to a desired angular position with respect to the ends of the handle resulting in varying compressive forces being applied to the springs. The springs in the ends of the handle have screw adjustable supports for varying the positions of the bases of the springs with respect to the end of the bow limb thus resulting in controllable biasing forces on the bow limbs at their connections with the handle of the bow.

3,635,206
ADJUSTABLE MASONRY SAW
John R. Harclerode, Prairie Village, Kans., assignor to Robert G. Evans Company, Kansas City, Mo.
Filed Oct. 12, 1970, Ser. No. 79,869
Int. Cl. B28d 1/03
U.S. Cl. 125—13 8 Claims

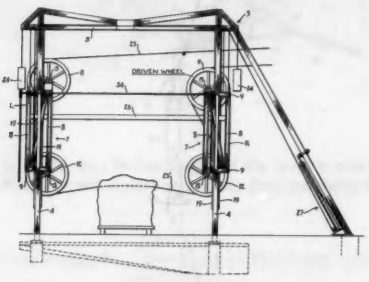


The reservoir pan incorporates the saw table tracks and is variable in position with respect to the circular saw blade providing adjustability for reducing the necessity of the operator bending over the edge of the pan when a small workpiece is cut.

3,635,207
WIRE-TYPE STONE-CUTTING SAW

Casper R. Grage, and Theodore R. Vessels, both of Escondido, Calif., assignors to Continental Granite Corp., Escondido, Calif.

Filed Dec. 31, 1969, Ser. No. 889,581
Int. Cl. B28d *1/08*
U.S. Cl. 125—21 3 Claims

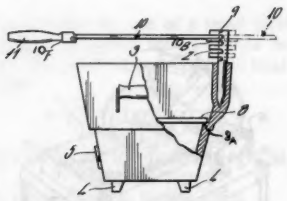


Two separate wire-type stone-cutting saws are arranged side-by-side with the cutting stretches of their wires traveling linearly across the same work zone; the wire-guiding wheels of both saws being carried by frames with trolleys at their upper and lower ends that ride on rigid upright columns at opposite sides of the work zone, the connections between the wheel frames and the trolleys being transversely adjustable so that the location of the cut to be made by each saw can be set without disturbing the block of stone to be cut, and the wheel frames of the two saws also being tiltable into downwardly convergent relationship to bring the bottom peripheral portions of their lower wheels and hence their cutting stretches into close juxtaposition.

3,635,208
ROASTER

Cheng-Hsuon Hwang, No. 223, Chung Hwa Road, Hsinchu, Taiwan

Filed Mar. 6, 1970, Ser. No. 17,230
Int. Cl. A47j *37/00*; F24b *3/00*
U.S. Cl. 126—25 A 4 Claims

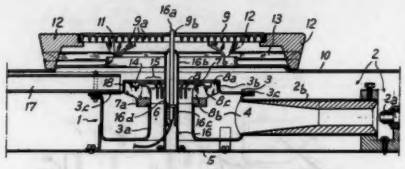


A roster, comprising a funnel-shaped cast body having walls including a backwall and having an interior adapted to receive fuel and open at the top, the backwall in the upper center thereof formed with at least one substantially vertical supporter opening extending therein and open at the top, and a supporter means adapted to releasably support a grill thereon and including at least one supporter rod at the bottom thereof substantially complementary to the at least one supporter opening releasably being securely held therein.

3,635,209
GAS BURNER

Roger Vignes, Paris, France, assignor to Service National dit: Gaz de France, Paris, France

Filed Dec. 9, 1969, Ser. No. 883,381
Claims priority, application France, Dec. 11, 1968, 177758
Int. Cl. F24c *3/00*
U.S. Cl. 126—39 H 6 Claims

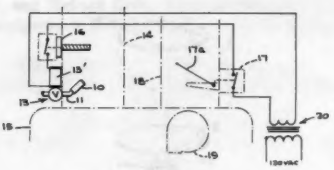


A gas burner, particularly for gas cookers, constituted by a mixer, an enclosure forming an annular distribution chamber and by a burner head provided with radial slots and connecting said distribution chamber to the atmosphere, said gas burner being characterized in that it is placed below a protective plate **10** provided with an opening **11**, in that the upper face of the burner head onto which the radial slots **8** open out is downwardly inclined towards the center of said head, in that the radial slots **8** are obturated at their outer vertical edge **8***a* and at the base in the zone of their inner edge **8***b* completely open at their inner edge and in that, in the central zone of the slots **8***c*, the burner head has an annular groove **14** on its upper face.

3,635,210
FURNACE HUMIDIFIER

William B. Morrow, Winston-Salem, N.C., assignor to Aqua-Mist, Incorporated, Winston-Salem, N.C.

Filed Oct. 16, 1970, Ser. No. 81,379
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 9 Claims



A humidifier unit for a warm air-heating system including a solenoid valve controlled water spray nozzle to be located in a portion of the air passage system through which warm air leaves a furnace to discharge a fine mist spray into the leaving air, a manually variable temperature-sensitive switch for sensing the air temperature in the passage, a sail switch activated by airflow through the air passage system, and an electrical circuit interconnecting the solenoid valve with the switches to operate the valve.

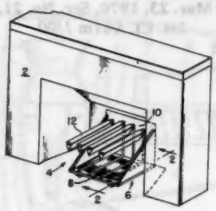
3,635,211
HEAT EXCHANGER FOR FIREPLACES

Henry O. Englert, 510 "F" St., Blaine, Wash.

Filed Apr. 7, 1970, Ser. No. 26,245
Int. Cl. F24b *1/18*
U.S. Cl. 126—121 3 Claims

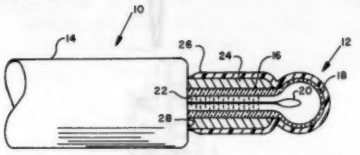
A heat exchanger for an existing fireplace which includes a grate means and air-transporting means in communication with the grate means. The exchanger further includes a blower whereby when the air within the grate means is

heated, the blower will move the heated air either outwardly into the room where the fireplace is located or alternatively blow it to another section of the structure. Alternatively, the



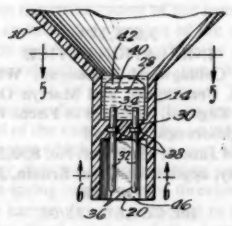
structure could include within one section of the air-transporting means a supplemental heating means whereby the heat exchanger is useable for heating purposes even in the absence of a fire within the fireplace.

3,635,212
COATED ION MEASURING ELECTRODE
Hideo Watanabe, and John E. Leonard, both of Fullerton, Calif., assignors to Beckman Instruments, Inc.
Filed Mar. 3, 1969, Ser. No. 803,813
Int. Cl. G01n *27/30*
U.S. Cl. 128—2 **9 Claims**



An ion measuring electrode is disclosed in which the ion sensitive barrier thereof is coated with reconstituted cellulose which is applied to the electrode in such a manner that the cellulose coating will remain on the electrode even after continued use thereof. The invention is particularly applicable to the coating of glass electrodes mounted in catheters utilized in the in vivo ion concentration measurements of body fluids.

3,635,213
METHOD OF DETERMINING THE PRESENCE OF CYSTIC FIBROSIS
James F. LaHay, St. Louis, Mo., assignor to Sherwood Medical Industries Inc.
Filed Nov. 28, 1969, Ser. No. 880,810
Int. Cl. A61q *5/05*
U.S. Cl. 128—2 R **5 Claims**



A disposable combination collection and measuring electrode which may be strapped to a patient to collect sweat stimulated by iontophoresis and which may be connected to an analyzing instrument for analyzing the conductivity of the collected sweat in a manner so as to preclude evaporation and minimize the possibility of contamination. The collection and measuring electrode is formed of a funnel shaped plastic element and in the base thereof, there are located two electrodes of a precise length and spaced from each other a precise distance. The base is configured so that a sample as small as 19 microliters may be used for analysis.

3,635,214
VISUAL PULMONARY METER
William A. Rand, 3299 Cambridge Ave., Riverdale, N.Y., and Jerome Kaufman, 615 West 183rd St., New York, N.Y.
Filed July 29, 1970, Ser. No. 59,205
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **11 Claims**

A pocket-sized pulmonary meter which includes a hollow cylindrical chamber for slidably receiving a piston. A breathing tube assembly communicating with one end of the cylindrical chamber forms a flow passageway terminating with a mouthpiece through which a patient can exhale into the cylindrical chamber and correspondingly move the piston by this expiratory force. An air exit regulator is provided at the other end of the cylindrical chamber and has calibrated registering apertures to selectively vary the rate at which air can escape from the chamber and will thus control resistance to piston movement. The breathing tube may further include an adapter for introducing an inhalator. In an alternate embodiment the device is provided with a slidable gate valve and adapter for securing a medicament dispenser whereby rotation of the mouthpiece will selectively operate the valve and will permit either inhalation of the medicine or exhalation into the cylindrical chamber.

3,635,215
MEDICAL REMOVAL HOOK
James J. Shea, Dearborn Heights, and Russell W. Kouba, Ferndale, both of Mich., assignors to Gam Rad, Incorporated, Detroit, Mich.
Filed Aug. 14, 1969, Ser. No. 850,120
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **6 Claims**

A removal hook assembly for removing intrauterine contraceptive devices (IUCD) such as coils or the like; the removal hook assembly includes a hook member and a retention tube slideably supported on the hook member to

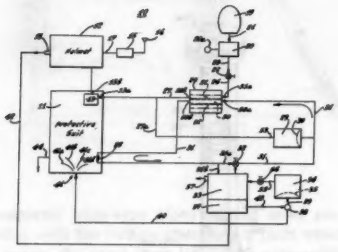
facilitate gripping and removal of the IUCD with the retention tube further acting to prevent damage to the uterus and/or cervix by the hook during insertion and extraction of the hook assembly.

3,635,216

LIFE SUPPORT SYSTEM

Daniel L. Curtis, Manhattan Beach, Calif., assignor to Granted to National Aeronautics and Space Administration under the provisions of 42 USC 2457(d)

Filed Jan. 29, 1968, Ser. No. 701,244
Int. Cl. A62b 7/02
U.S. Cl. 128—142.5 **9 Claims**



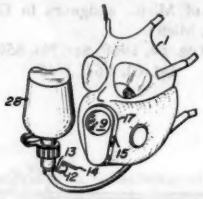
A lightweight life support system for extravehicular space activity which may be either mounted in a back-pack or integrated into a protective suit. Two subsystems are provided to maintain the suit inhabitant in his environment. The first subsystem is an open loop, single pass ventilation system, having a high-pressure oxygen and mixed gas storage which is maintained within lightweight, stress-limited pressure vessels. A breathing bag cooperates with the open loop system to meet the peak respiratory demands. The second subsystem comprises a protective suit having a duct network, a liquid pump, and a sublimator-heat exchanger which in combination provide a suitable thermal condition.

3,635,217

DRINKING AND RESUSCITATION MASK

Norman Potash, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Mar. 4, 1969, Ser. No. 804,188
Int. Cl. A62b 7/00
U.S. Cl. 128—145.5 **11 Claims**



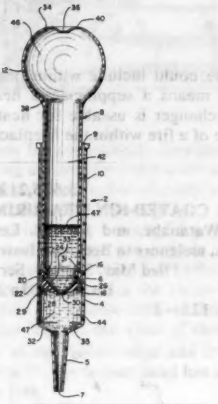
An improved protective mask means having a drinking and resuscitation connection means to permit drinking and resuscitation while wearing the mask in a contaminated atmosphere.

3,635,218

COMBINATION BULB-PISTON SYRINGE

Richard E. Ericson, Keene, N.H., assignor to Elliot Laboratories, Inc., Fitzwilliam, N.H.

Filed Mar. 23, 1970, Ser. No. 21,737
Int. Cl. A61m 1/00
U.S. Cl. 128—231 **2 Claims**



A piston-type irrigating syringe, in which the piston shaft, slidable in the syringe barrel with the resilient piston, is hollow and extends into and communicates with an integral resilient hollow bulb and in which the resilient piston has a restricted passage providing continuous communication between the hollow shaft and bulb and the barrel and nozzle opening of the syringe, whereby the suction and positive pressures applied to a body cavity are applied gradually at a controlled rate and can be varied over a wide gradient, as compared to standard bulb-type syringes and standard piston-type syringes, whereby such pressures and suctions can be controlled to avoid harmful effects, whereby the necessity of employing more than one kind of syringe, i.e., a bulb-type syringe for mild pressures and suctions and a piston-type syringe for greater pressures an suctions, is avoided, whereby the fluid reservoir capacity is greatly increased over standard syringes, and whereby greater maximum suctions and pressures can be achieved compared to standard syringes.

3,635,219

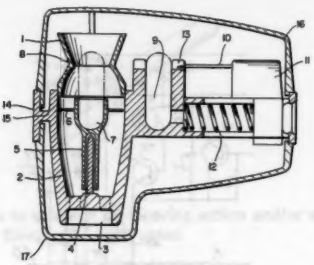
INHALATION DEVICE

Roger Edward Collingwood Altounyan, Wilmslow; Harry Castle Howell, Connington, and Martyn Omar Rowlands, Epping, all of England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

Filed June 4, 1969, Ser. No. 830,355
Claims priority, application Great Britain, June 7, 1968, 27209/68
Int. Cl. A61m 15/06
U.S. Cl. 128—266 **4 Claims**

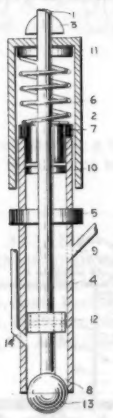
A dispensing device for dispensing finely divided medicament from a capsulelike container. A hollow elongated housing has at both ends thereof at least one passageway to permit passage of air, and one end is adapted for insertion into the mouth. A propellerlike member is rotatably mounted in

the housing and has on the part thereof farthest from the end of the housing adapted for insertion into the mouth a mount-



ing means adapted to receive the capsulelike container. Also included is a means for perforating the container.

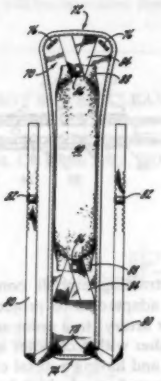
3,635,220
DEVICE FOR SUCTIONING
Harold Elcaness, 3555 Kings College Pl., Bronx, N.Y.
Filed June 13, 1967, Ser. No. 645,776
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **7 Claims**



The suction device has a telescoping upper and lower casing and an interposed carrier director with fixtures attached for the purpose of controlling suction and the amounts of fluid allowed into the lower casing of the instrument, and depending on the controlled protrusion of the carrier-director, control of suction and fluid in the parts to be suctioned is obtained, as well as releasing unwanted parts that may be suctioned into the mouth of the instrument. Transmission of pressure to the carrier-director directly by pushing a knob on the proximal end of the carrier-director or indirectly by pushing the upper casing which telescopes over the lower casing moves the carrier director by transmitting pressure over fixtures enclosing a spring on the carrier-director. A ring on the distal end of the carrier-director is moved to slide over the u fluid inlet in the distal portion of the lower casing, thus stopping the flow into and out of the mouth of the lower casing, while a ball-like object attached to the lower end of the carrier-director is protruded away from the mouth of the lower casing thus allowing the transmission of suction to the parts suctioned.

If unwanted parts are inadvertently suctioned to the opening of the lower casing, further protrusion of the carrier-director by direct pressure on the knob of the carrier-director moves the ring away from the fluid inlet, permitting fluid to enter the lower casing and flush the intruding portion away from the mouth of the device. Release of pressure on the carrier-director knob allows the continuation of suctioning of the body parts intended. Release of the upper casing closes off the device from the body and permits the inflow of fluid into the lower casing and continuation of suctioning of the matter taken into the device. Thus the suctioned matter is diluted and pressured out of the suction outlet on the upper part of the lower casing by the fluid. The spring tension having been released by release of pressure on the upper casing retracts the carrier-director and the attached ring and ball move away from the fluid inlet, respectively, and the ball occludes the mouth of the lower end of the device, thus continuous suction and dilution occur in the lower casing which has been closed off from the body parts.

3,635,221
FLUSHABLE FABRIC
John F. Champaigne, Jr., Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Aug. 13, 1969, Ser. No. 849,737
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 **9 Claims**

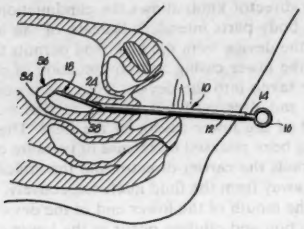


A sanitary napkin designed for disposal in conventional toilet systems. A conventional pad is enclosed in a wrapper comprising a web of nonwoven fibers discontinuously bonded with a water-sensitive adhesive that is relatively more soluble in cold water than in warm water. The napkin is used with supplementary support means.

3,635,222
ANGULAR CURETTE
Ralph R. Robinson, P. O. Box 668, Middlesboro, Ky.
Filed July 31, 1970, Ser. No. 59,900
Int. Cl. A61b *17/22*; A61f *5/46*
U.S. Cl. 128—304 **6 Claims**

A curette having an insertion tube, an ejection plunger reciprocable within the tube, and a pair of elongated, flexible branches at one end of the plunger which are joined together at their outer ends and are preformed to present in the uterus a self-sustaining loop which is angularly offset from the longitudinal axis of the plunger. When the plunger is withdrawn

from the expulsion end of the tube, the branches are flexed into a common plane with the plunger, and lie in side-by-side



relationship within the tube. Two species of the curette provide alternate designs and locations of teeth on the branches.

3,635,223

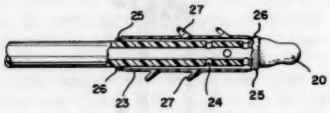
EMBOLECTOMY CATHETER

Charles H. Klieman, Brooklyn, N.N.Y., assignor to United States Catheter & Instrument Corporation, Glens Falls, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,363

Int. Cl. A61m *25/00*; A61b *17/22*

U.S. Cl. 128—348 **7 Claims**



Apparatus for extracting emboli comprising a cannula, preferably guidable, adapted to be projected through a body passage (e.g., vein or artery) to a point adjacent the embolus to be removed, together with a catheter adapted to be passed through the cannula and having a distal end provided with an inflatable balloon the surface of which has rearwardly angled protrusions designed to engage an embolus into which the catheter end has been projected and to convey the captured embolus into the cannula as the catheter is withdrawn therein.

3,635,224

SAFE RATE PACER

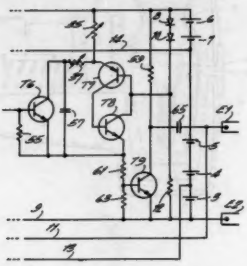
Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 10, 1970, Ser. No. 10,225

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **14 Claims**

A pacer which is not susceptible to a runaway rate condition no matter how many batteries fail and does not cease pacing even if several batteries fail. The timing circuit employed includes a capacitor which charges from a charging potential. When the capacitor voltage reaches a threshold potential, a pulse is generated. The charging potential is derived from a series string of batteries. The threshold potential is derived at the junction of a diode and a resistor, the diode and the resistor being connected in series across the string of batteries. The threshold potential is thus equal to the charging potential less the essentially constant drop across the diode. Battery failures result in an increase in the



pulsing rate, but as long as pacing continues the pulsing rate does not approach a dangerous level.

3,635,225

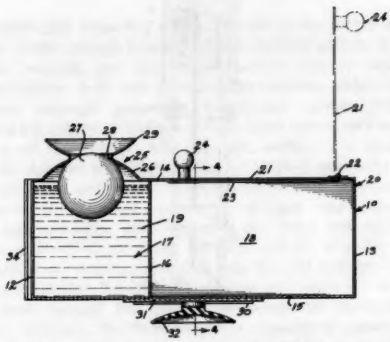
ASH TRAY

Malcolm C. Andrews, 652 Campbell St., Williamsport, Pa.

Filed Feb. 12, 1970, Ser. No. 10,750

Int. Cl. A24f *19/14*

U.S. Cl. 131—236 **2 Claims**



An ash tray including a supply of liquid such as water that has a ball member floating thereon whereby a cigarette, cigar or the like can be engaged by the moistened ball member to safely and conveniently extinguish the cigarette or cigar.

3,635,226

TOBACCO-SMOKE FILTERS

Henry George Horsewell, and Thomas William Charles Tolman, both of London, England, assignors to British-American Tobacco Company Limited, London, England

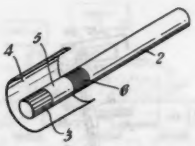
Filed June 16, 1969, Ser. No. 833,389

Int. Cl. A24b *15/02*; A24d *01/06*

U.S. Cl. 131—266 **5 Claims**

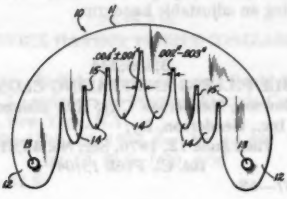
The invention concerns a multicomponent filter for tobacco-smoking articles, such as cigarettes. A three-component

filter has at least an absorbent filter section, an aqueous humidifying means and a poorly absorbent section. The humidi-



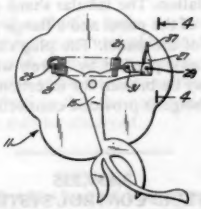
fying means is to enhance the filtering action and/or serve as a flavorant or flavor-enhancing agent.

3,635,227
COMB FOR HOLDING A TOUPEE
William H. Lee, 398 Warwick Ave., Mount Vernon, N.Y.
Filed June 18, 1970, Ser. No. 47,316
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 **7 Claims**



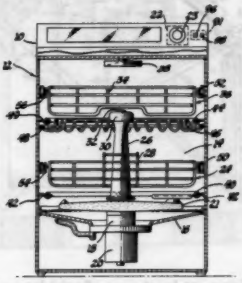
A comb for holding or fastening a toupee is formed of a thin sheet of metal in arc form having teeth separated by very narrow slots.

3,635,228
ADORNMENT DEVICE
Norman L. Heikes, Santa Barbara, Calif., assignor to Pantec Development Company, Santa Barbara, Calif.
Filed Dec. 12, 1969, Ser. No. 884,459
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **8 Claims**



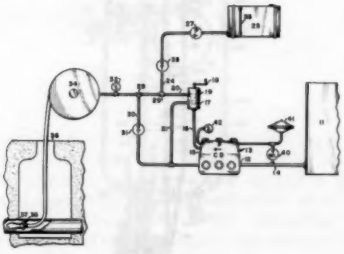
The invention is directed to a decorative attachable unit for attachment in the hair of the wearer. A coiled spring element which is normally compressed is supported at the rear side of the unit with a means provided to expand the spring for insertion of hair strands between the turns. With spring release the inserted hair strands are gripped between adjacent spring coil turns.

3,635,229
SELECTIVE HEATING SYSTEM FOR AUTOMATIC WASHING MACHINE
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 19, 1970, Ser. No. 38,750
Int. Cl. B08b *3/02, 3/10*
U.S. Cl. 134—58 D **3 Claims**



A dishwasher having upper and lower utensil support racks and a heater element positioned adjacent each rack for preselective drying of utensils held in the racks. Manually operated selector switches are provided in electrical series with the dishwasher timer control circuit for determining which of the heaters will be operative during the washing and drying cycle.

3,635,230
ROOT FUMIGANT SEWER CLEANER SPRAYER
John A. Kirschke, P.O. Box 125 Ammann Road, Boerne, Tex.
Filed May 13, 1970, Ser. No. 36,901
Int. Cl. B08b *3/02, 9/04*
U.S. Cl. 134—168 C **4 Claims**

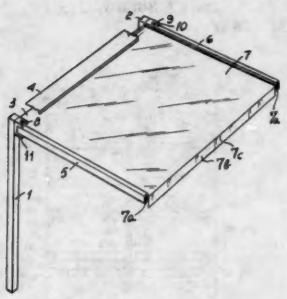


An improved jet sewer cleaning device incorporating equipment for cleaning and dispensing predetermined controlled amounts of root-killing fumigant to obstructing root deposits.

3,635,231
COLLAPSIBLE BEACH-UMBRELLA
Dario Bernardi, Via Mazzini 5, Cattolica, Italy
Filed May 25, 1970, Ser. No. 40,207
Claims priority, application Italy, May 29, 1969, 1651 A/69
Int. Cl. E04f *10/06*
U.S. Cl. 135—5 R **7 Claims**

Collapsible beach-umbrella with a bearer structure for an awninglike shade and at least one pole adapted to be fixed on the ground for supporting said bearer structure, charac-

terized in that said bearer structure includes at least one roller shade unit supported on said pole, at least one elongated bearer guide for guiding and retaining said shade in



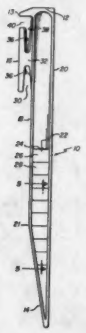
stretched condition, at least one of said bearer guides having one end thereof hingedly connected with said roller-shade unit and having stop means retaining said bearer guide in a cantileverwise extended position with respect to said pole.

3,635,232

ROPE RETAINING STAKE

Jordan I. Rotheiser, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.

Filed Apr. 27, 1970, Ser. No. 32,473
Int. Cl. A45f *1/16*
U.S. Cl. 135—15 PE 4 Claims



A unitary tent stake having a cleat member along a shank edge for rope engagement; and having opposite louver channels for anchoring the stake in the ground.

3,635,233

COLLAPSIBLE CANE AND CRUTCH CONSTRUCTION

Charles H. Robertson, 505 Miller, Dumas, Tex.

Filed Mar. 19, 1970, Ser. No. 21,140
Int. Cl. A44b *1/00*; A45b *9/02*
U.S. Cl. 135—47.5 4 Claims

Segmented supporting aids of collapsible construction held in locking engagement by a tension cord disposed within the tubular segments of the aid. In addition to a collapsible cane construction, a forearm engaging crutch with an improved

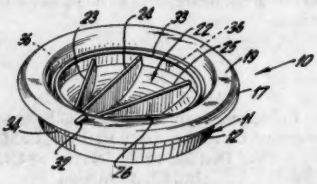
adjustable forearm engaging band and an underarm-engaging crutch having an adjustable handgrip.

3,635,234

TEARABLE FILLING AND SEALING CLOSURE PLUG

Willis S. Dawson, Henderson City, Ky., assignor to Cyanede Plastics, Inc., Henderson, Ky.

Filed June 12, 1970, Ser. No. 45,813
Int. Cl. F16k *13/04*
U.S. Cl. 137—68 6 Claims



A plastic resin closure plug is particularly adapted for insertion into a rigid panel of a structure which is to be filled with a foam insulation. The tubular shank portion of the plug fits within a hole of the panel and a flange portion of the plug lies on one side of the panel. The plug's top portion is connected to the shank portion by a web which is sufficiently thin so that it may be broken for insertion of a foaming nozzle. An integral hinge is provided connecting the top portion with the plug.

3,635,235

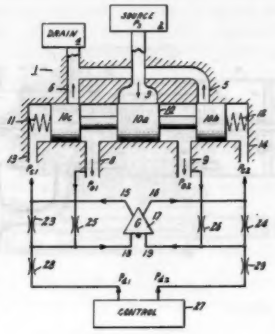
FLUID CONTROL SYSTEM

Willis A. Boothe, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 2, 1970, Ser. No. 375
Int. Cl. F15c *3/08*
U.S. Cl. 137—81.5 3 Claims

Control pressure to a hydraulic control valve is supplied by a fluid amplifier. Pressure feedback paths are provided to the amplifier inputs from both the amplifier outputs and the hydraulic control valve outlets so as to utilize sufficient pressure of the fluid amplifier to overcome friction within the

control valve assembly. The amplifier and associated feedback paths further constrain the system output differential



pressure to be linearly proportional to the system input differential pressure.

3,635,236

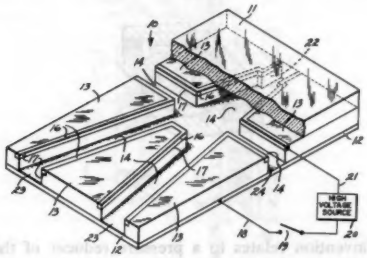
FLUIDIC DEVICE HAVING VISIBLE IONIZABLE FLUID FLOW

Eric Lake Faley, Buffalo Grove, Ill., and David Paul Riewe, Trenton, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,497

Int. Cl. F15c *1/00, 4/00*

U.S. Cl. 137—81.5 **3 Claims**



The operation of a fluidic logic device, or the like, is rendered visible by using an ionizable fluid, such as argon, within the device and applying an electric field across the channels of the device of an intensity sufficient to ionize and render visible the fluid so that the path which the fluid takes through the device may be observed.

3,635,237

METHOD AND APPARATUS FOR FULL SHUTOFF SEQUENCING VALVE

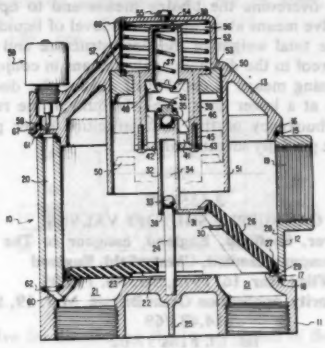
Carl L. C. Kah, Jr., 778 LaKeside Drive, North Palm Beach, Fla.

Filed Apr. 17, 1970, Ser. No. 29,513

Int. Cl. F16k *21/00, 21/60*; B05b *9/00*

U.S. Cl. 137—119 **8 Claims**

A sequencing valve which distributes line pressure from a single-inlet flow line, sequentially, through a plurality of outlet flow lines as a selective function of pulsating line pressure or an independently operated pilot valve. The sequencing valve includes a housing having a valving member positioned between the inlet line and the outlet lines. The valving member consists of a number of pie-shaped hinged flaps or valve elements corresponding to the number of outlet lines.



Each flap is sequentially raised by a lifting foot which undergoes reciprocable and step-by-step rotatable movement in response to changes in inlet line pressure or pilot valve operation.

3,635,238

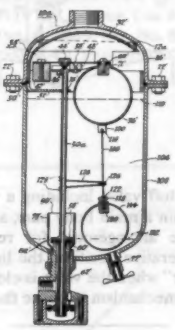
AUTOMATIC VALVING DEVICE

Paul M. Hankison, Peters Township, and William Foster Walker, Bethel Park Borough, both of Pa., assignors to Hankison Corporation, Cononsburg, Pa.

Filed Jan. 19, 1970, Ser. No. 3,880

Int. Cl. F16t *1/20*

U.S. Cl. 137—195 **21 Claims**



An automatic valving device, comprises a receiver for liquid, an elongated float structure disposed generally vertically in the receiver and including an upper float portion positioned in an upper region of the receiver and a lower float portion positioned in a lower region of the receiver, inlet and outlet port means for the receiver, and discharge valve means for the receiver coupled to the outlet port means. The float structure is coupled to the outlet port means and to the discharge valve means for opening and closing the discharge valve means for opening and closing the discharge valve means in response to changes in liquid level in the receiver. Biasing means are coupled to the discharge valve means for urging the discharge valve means to its

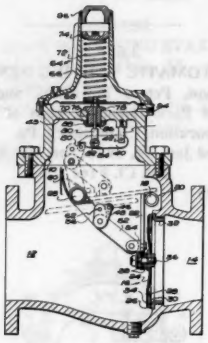
closed position. The buoyancy of the float structure lower portion although submerged is insufficient to overcome the biasing means and to open the discharge valve means when closed, and the buoyancy of the float structure lower portion when fully submerged together with the buoyancy of the float structure upper portion when at least partially submerged is sufficient to overcome the biasing means and to open the discharge valve means at an upper limit level of liquid in the receiver. The total weight of the float structure and of the coupling thereof to the discharge valve means in conjunction with the biasing means is capable of closing the discharge valve means at a lower limit level of liquid in the receiver against the buoyancy of the float structure lower portion when at least partially submerged.

3,635,239

GAS SUPPLY SHUTOFF VALVES

Sydney Farrer, Sheffield, England, assignor to The Bryan Donkin Company Limited, Chesterfield, England

Filed Mar. 16, 1970, Ser. No. 19,805
Claims priority, application Great Britain, Mar. 19, 1969, 14,483/69
Int. Cl. F16k *17/02*
U.S. Cl. 137—461 **6 Claims**



A gas supply shutoff valve including a valve member hingedly mounted within a main body part; a detent mechanism including a linkage arrangement for retaining said valve member in an inoperative position, the linkage arrangement moving "overcenter" when the valve is closed; and means for tripping the detent mechanism to cause the valve to shut.

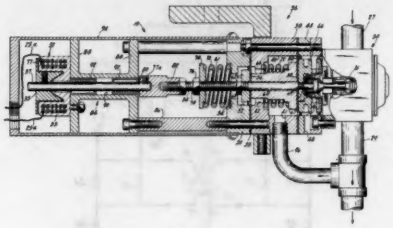
3,635,240

ELECTROPNEUMATIC TRANSDUCER AND PNEUMATIC WEB TENSIONING SYSTEM

George Vischulis, Menomonee Falls, and Charles K. Sedlak, Wauwatosa, both of Wis., assignors to Zerand Corporation, New Berlin, Wis.

Filed Nov. 21, 1969, Ser. No. 878,691
Int. Cl. G05d *15/01*
U.S. Cl. 137—495 **11 Claims**

An electropneumatic transducer having a pneumatic pressure regulator operatively controlled by a solenoid, an adjustable spring biasing assembly connected to the regulator and solenoid to maintain the moving parts of the transducer in a normally closed position and to minimize vibratory motion induced in the moving parts. A diaphragm arrangement is connected to respond to the output pressure of the regulator to introduce an additional force to the force of the solenoid. The inherent friction of the solenoid is reduced by a linear bearing arrangement. A pneumatic web tensioning system utilizing such an electropneumatic transducer.

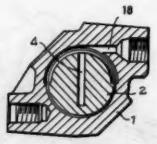


3,635,241

PRESSURE REDUCER, PARTICULARLY FOR HYDRAULIC BRAKE SYSTEM IN VEHICLES

Riccardo Franzi, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed July 14, 1969, Ser. No. 841,525
Claims priority, application Italy, Apr. 1, 1969, 841315
Int. Cl. F16k *17/02*
U.S. Cl. 137—505.18 **1 Claim**



This invention relates to a pressure reducer of the type having a piston slidable in a cylinder with a piston head in the cylinder cooperating with a resilient packing to subdivide the cylinder into high- and low-pressure chambers. A spring is provided in the high-pressure chamber surrounding the piston rod, and engages at one end a piston rod packing and at the other end a radial projection on the piston rod. The radial projection is spaced axially from the piston head by a distance which is greater than the axial length of the piston head packing, the spring preferably holding the piston at the low-pressure end of the cylinder even in the absence of external spring loading on the piston rod.

3,635,242

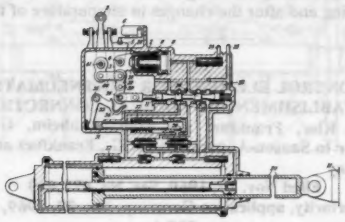
VALVE SEIZURE PROTECTION DEVICES

Jerzy Leon Coutenay, and John Richard Simmons, both of Wolverhampton, England, assignors to H. M. Hobson Limited, London, England

Filed July 10, 1970, Ser. No. 53,926
Int. Cl. F16k *37/00, 11/07*
U.S. Cl. 137—554 **3 Claims**

A hydraulic actuator of the type specified for operating a flying control surface of an aircraft, which includes

mechanism responsive to operation of the pilot's input



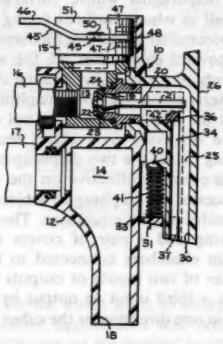
member in the event of seizure of the control valve to operate a warning device.

3,635,243

FAUCET-COUPLING ASSEMBLY FOR A WASHING MACHINE

Bernard J. Brezosky, Louisville, Ky., assignor to General Electric Company

Filed Sept. 19, 1969, Ser. No. 859,441
Int. Cl. B05b *1/22*; F16k *13/00*; E03b *7/07*
U.S. Cl. 137—583 **4 Claims**



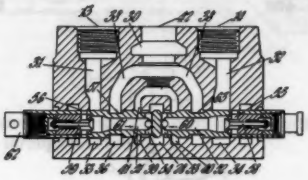
An improved coupling assembly for connecting a washing machine to a water faucet has a handle member protruding from its body portion that serves as a spout for dispensing water from the assembly. A slidable member disposed between the handle member and the body portion is adapted to be manually pushed from a first to a second position which action opens a shutoff valve to allow the water to be dispensed through the handle member. The slidable member is linked to a quick-release connector that fastens the assembly to the faucet so that manipulation of the connector to remove the assembly from the faucet slides the slidable member toward its second position and opens the valve, thereby bleeding off water pressure from the assembly and preventing hot water from the assembly from spurting from the connector.

3,635,244

VALVE FOR DISTRIBUTING FLUID TO A SYSTEM OF FLUID-ACTUATED MACHINES

Ferruccio Lamborghini, Cento (Ferrara), Italy, assignor to Lamborghini Oleodinamica S.p.A., Bologna, Italy

Filed Dec. 12, 1970, Ser. No. 2,067
Claims priority, application Italy, Jan. 13, 1969, 1504-A/69
Int. Cl. F16k *11/10*
U.S. Cl. 137—596 **4 Claims**



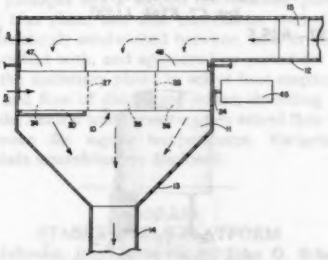
A valve for distributing fluid to a system of fluid-actuated machines in which a monobloc defines a plurality of spaced compartments, with each compartment having ports communicable with an individual machine of the system, first passage means in the monobloc for distributing fluid equally to the compartments, each compartment having a cavity to establish a second passage means for supplying fluid to the compartments and communicable with fluid outflow means from said monobloc, a pair of channels communicable with each of said compartments to exhaust fluid therefrom, first valve means in each compartment to direct the flow in said second passage means, and second valve means interposed between said first passage means and said compartment to control the flow of fluid to each machine whereby the machines may be actuated in series-parallel, in series or in parallel.

3,635,245

AIR CONTROL DEVICE

John L. Canfield, 7719 Isis Avenue, Los Angeles, Calif.

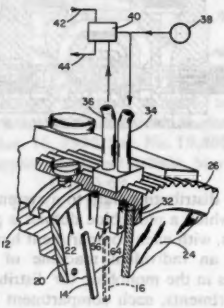
Filed Oct. 6, 1969, Ser. No. 863,905
Int. Cl. F16k *3/02*
U.S. Cl. 137—607 **5 Claims**



A damper control for an air-conditioning system including opposed walls defined by concentric, cylindrical segments divided transversely into three passageways in each of which is a vane, the vanes being on a shaft concentric with the opposed walls, the vanes also being angularly displaced relative to each other so that, when each vane is positioned intermediate the walls so as to open its passageway, the other two vanes engage the opposed walls to close their passageways, with a heating unit being positioned adjacent one of the

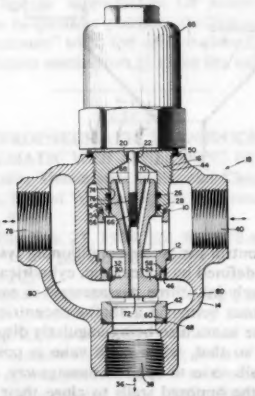
passageways to heat the air flowing through it, and a cooling unit being positioned adjacent another of the passageways for cooling the air flowing through that passageway.

3,635,246
CONTROL SYSTEM
Leon A. Glickman, Westwood, Mass., assignor to Keystone Bay State Industries, Inc., Boston, Mass.
Filed Nov. 4, 1969, Ser. No. 873,801
Int. Cl. F15c *3/00*
U.S. Cl. 137—608 **12 Claims**



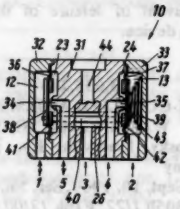
Fluidic control apparatus including structure defining a control passage for the flow of fluid along a straight path, the control passage being open at least one end, a slot dividing the control passage into two sections so that two opposed intermediate ports are defined in the walls of the slot, inlet means for supplying fluid to one of the sections, and outlet means for receiving fluid flow from the other section at an intermediate point along the length of the other section. A first blocking member is mounted for movement adjacent the open end of the passage to block flow through that end and a second blocking member is mounted for movement into the slot to interrupt fluid flow from the first section of the passage to the second section of the control passage.

3,635,247
CAGE VALVE WITH MULTIPURPOSE RING
Edward B. Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 28, 1970, Ser. No. 6,509
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.5 **10 Claims**



A three-way valve, having (1) a unitary balanced plug, (2) a pair of stacked cages each having an inverted cone-shaped end for engaging separate wedge-shaped ring seals to move them outwardly and into sealing contact with the valve body and (3) a unique ring member to apply a biasing force on the cage to permit the caged parts to expand without becoming distorted when the temperature of the fluid passing through the valve is increased or decreased and to also maintain the ring seals in fluidtight sealing contact with the valve body before, during and after the changes in temperature of the fluid.

3,635,248
CONTROL ELEMENT FOR THE PNEUMATIC ESTABLISHMENT OF LOGICAL CONNECTIONS
Gerhard Klee, Frankfurt am Main-Ginnheim, Germany, assignor to Sanson-Apparatebau A.G., Frankfurt am Main, Germany
Filed Nov. 17, 1969, Ser. No. 877,409
Claims priority, application Germany, Jan. 27, 1969, P 19 03 838.1
Int. Cl. F15c *3/04*
U.S. Cl. 137—625.5 **5 Claims**

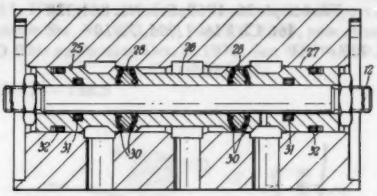


A control element, for the pneumatic establishment of logical connections, includes two coaxially arranged mutually interconnected diaphragms whose surfaces facing toward each other as well as whose surfaces facing away from each other can be subjected to a pressure medium. The diaphragm surfaces facing toward each other are the alternately acting switching elements of a three-way branch connection. Connecting rods interconnect the two diaphragms and extend through bores in the housing of the control element, and the diaphragms have relatively rigid plates secured thereto. A conical coil spring biases the two diaphragms to one position when no fluid pressure is effective on the control element. The active surfaces of the diaphragms subjected to a pressure medium are of substantially equal size. The control element includes a housing and a pair of covers which conjointly define diaphragm chambers connected to flow channels in the covers. Either of two inputs or outputs in the body may be connected to a third input or output by displacement of the diaphragms in one direction or the other.

3,635,249
SELECTOR VALVES AND SEALS THEREFOR
Douglas Frederick Kirkman, Ickenham, England, assignor to I.V. Pressure Controllers Limited, Feltham, England
Filed Jan. 30, 1970, Ser. No. 7,106
Claims priority, application Great Britain, Feb. 6, 1969, 6,579/69; May 23, 1969, 26,569/69
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.48 **8 Claims**

The spool of a selector valve of the spool-type is provided with sealing means in the form of at least one annular washer of plastic or elastomeric material which is clamped between two parts of the spool body and is so dimensioned relatively to the latter as to project outwardly therefrom to provide a flexible annular sealing flap encircling the spool body. The sealing flap is capable of limited flexing movement under the action of fluid or liquid pressure the arrangement being such that with fluid or liquid acting in one direction along the spool the sealing flap will perform no sealing function while

when the direction of fluid or liquid pressure is reversed said flap will be urged into an operative position wherein it will

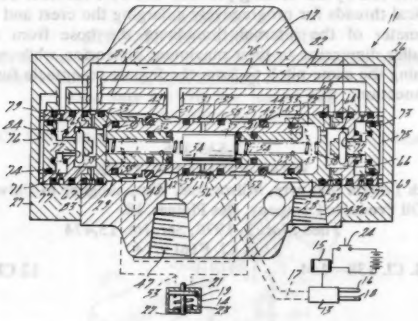


sealingly engage the inner surface of the bore in the valve body in which the spool is axially movable.

3,635,250
INDEXING FLUID CONTROL DEVICE

Edward B. Porter, Sr., Pontiac, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Filed Aug. 21, 1970, Ser. No. 65,960
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.63 **4 Claims**



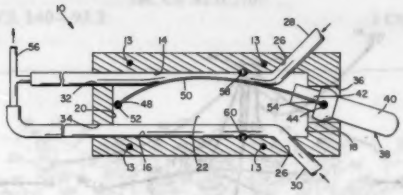
A fluid control device which shifts to alternate positions in response to successive applications and removals of signal pressure. The device uses no mechanical latches and has only a single bore and spool. It can be used with compressible or incompressible fluids, and avoids entrapment of entrained fluid particles when compressible fluids are used by an automatic venting arrangement for the spool end chambers.

3,635,251
VALVE

Stanley L. Gaines, Wayland, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Apr. 7, 1970, Ser. No. 27,196
Int. Cl. F16l *55/14*; F16k *31/56*
U.S. Cl. 137—636 **6 Claims**

A bistable double-acting valve includes a valve body having two opposed compression surfaces and an elongated spring element located between the two compression surfaces and having a first end pivotally secured to the valve port and its other end secured to an actuating lever. The length of the spring is such that a smooth curve is formed between its two ends in each of the two bistable positions, and in each bistable position the spring clamps a section of

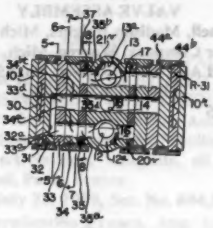


tubing against a corresponding compression surface to block fluid flow through that tubing.

3,635,252
PUSHBUTTON-OPERATED SLIDING PLATE MIXING VALVE

Irlin H. Botnick, 3155 Kersdale Road, Pepper Pike, Ohio

Filed Aug. 22, 1969, Ser. No. 852,200
Int. Cl. F16k *11/20*
U.S. Cl. 137—637 **24 Claims**



Captive in two open-top rectangular-section through-bores between a central wall and end walls in a valve body block, two similar sets of ceramic hard smooth plates as valving subassemblies each include stationary port plates, one resilient gasket sealed to central wall hot and cold supply and discharge passages and a second intermediate port plate, a stationary bias plate, and also pushbutton shifted movable plates alternatingly sandwiched between, held in sliding sealing face contact with, and apertured or ported for cooperation with the stationary plates to select four respective temperatures and flow of discharged water; throttling plugs included in the central wall presetting two mixed flow temperatures between the supply temperatures. Variants of the shiftable plate assemblies are disclosed.

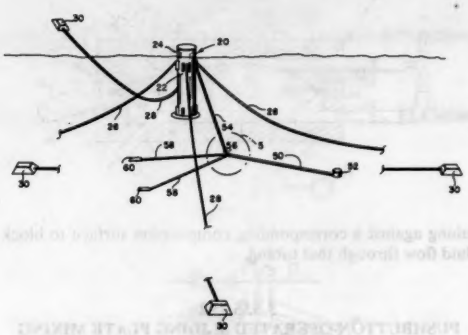
3,635,253
STABLE OCEAN PLATFORM

Virgil E. Johnson, Jr., Gaithersburg; John O. Scherer, Jr., Laurel; Eugene R. Miller, Annapolis, and Viggo A. Blaes, Pikesville, all of Md., assignors to Hydronautics, Inc., Laurel, Md.

Original application July 16, 1968, Ser. No. 745,285, now Patent No. 3,500,783. Divided and this application July 30, 1969, Ser. No. 870,874
Int. Cl. F16l *11/00*
U.S. Cl. 137—799 **7 Claims**

A stable, floating marine platform is provided having a natural period of oscillation greater than the period of the waves of maximum energy to which the platform may be exposed. A plurality of vertically and radially extending damp-

ing plates are circumferentially spaced around the upper and lower submerged portions of the platform, and a horizontal



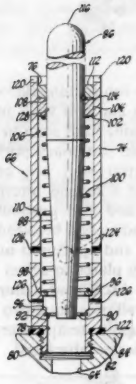
damping plate is secured to the bottom of the platform to prevent resonance oscillation of the platform.

3,635,254

VALVE ASSEMBLY

Robert D. Mitchell, Madison Heights, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Aug. 18, 1969, Ser. No. 850,829
Int. Cl. F15d 1/00
U.S. Cl. 138—45 **5 Claims**



A valve assembly having a housing with an inlet and outlet, has a stem valve situated therein and resiliently urged in the flow-increasing direction; a collarlike member slidably contained within the housing and carried by the stem valve is, upon application of sufficient force, movable with respect to the stem valve; when the stem valve is forced in the flow-decreasing direction the collar is held against movement by an abutment permitting relative motion between the stem valve and collar with such relative motion continuing until a predetermined rate of flow is attained through the valve assembly.

3,635,255

CORRUGATED FLEXIBLE HOSE WITH INTEGRAL SOCKET AND APPARATUS FOR FORMING SAME

Vance M. Kramer, c/o Crushproof Tubing Co., McComb, Ohio

Filed Sept. 26, 1969, Ser. No. 861,320
Int. Cl. F16l 11/06, 11/10
U.S. Cl. 138—122 **3 Claims**

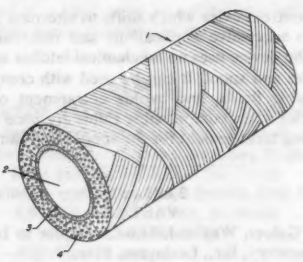
A flexible length of hose or tubing formed of helical circumferential corrugations and having means integral therewith at one end for threaded connection to another similarly constructed length in end-to-end relation. The internal threads of the helical corrugations at the end having the receptacle or female connection portion are of approximately the same crest and root diameter as the external threads of the rest of the hose to provide a threaded socket for the opposite end of a similarly constructed hose length. A core member is provided for forming the enlarged female socket at one end by the cording process. The core member defines helical threads for progressively enlarging the crest and root diameter of the internal threads of the hose from their smaller dimension to their maximum dimension while maintaining the same pitch to form the female receptacle for the connection.

3,635,256

WEAR-RESISTANT TUBE

Jack Lowrie McLarty, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 2, 1970, Ser. No. 15,474
Int. Cl. F16l 9/14
U.S. Cl. 138—144 **12 Claims**



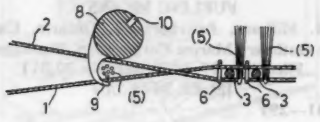
A wear-resistant tube having a smooth inner wall and constructed of layers of helically wound glass filaments and finely divided particles of copper at the surface of the smooth inner wall bonded together in a thermosetting resin system.

3,635,257

METHOD OF MANUFACTURING CARPETS

Kinichi Takizawa, 1831-6, Gobyo-Machi, Yonezawa-shi, Japan

Continuation-in-part of application Ser. No. 668,291, Sept. 11, 1967, now abandoned , Continuation-in-part of application Ser. No. 833,319, June 16, 1969, now abandoned. This application Oct. 6, 1970, Ser. No. 78,509
Int. Cl. D03d *27/04*
U.S. Cl. 139—116.5 3 Claims



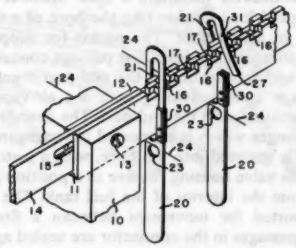
A carpet is manufactured by forming a shed of warp yarns, inserting a pile yarn through the shed between layers of warp yarns defining the shed, advancing a rotating pile-wrapping rod with a hook at one end from one side of a loom across the wrap yarns to helically wrap the pile yarn around the wrapping rod so as to embrace at least one warp yarn of one layer of the warp yarns by each loop of the helix, forming the shed in the opposite direction by moving the yarns of the one layer embraced by the pile yarn loops between adjacent warp yarns of the other layer, inserting a weft through the shed, interconnecting the warp yarns with a binding weft and cutting the loops of the pile yarn along the wrapping rod.

3,635,258

STOP MOTION DROP WIRE

Robert H. Powell, Hartwell, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed July 2, 1970, Ser. No. 51,848
Int. Cl. D03d *51/26*
U.S. Cl. 139—368 1 Claim



A drop wire which has its top portion securely held in a slot formed on the drop wire by attaching two metal strips thereto.

3,635,259

IMITATION MOHAIR FABRIC

Irving Layton, Great Neck, N.Y., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation of application Ser. No. 710,628, Mar. 5, 1968, now abandoned. This application Feb. 27, 1970, Ser. No. 14,779
Int. Cl. D03d *15/00*
U.S. Cl. 139—426 9 Claims

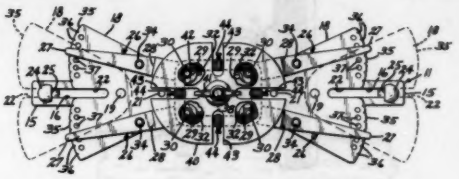
A woven imitation mohair fabric comprising a spun yarn consisting essentially of a blend of trilobal polyester fibers and wool fibers.

3,635,260

COIL-WINDING APPARATUS

Edwin N. Olson, 109 1st St. S. E., Minot, N. Dak.

Filed Dec. 11, 1969, Ser. No. 884,212
Int. Cl. B21f *3/00*
U.S. Cl. 140—92.2 3 Claims



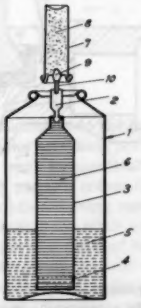
A rotary coil-winding head having diametrically opposed jaw-mounting members mounted for movements radially of the axis of rotation of the head, and pairs of wire receiving jaw elements mounted on the jaw-mounting members for movement of the jaw elements of each pair relative to each other and to the jaw elements of the other pair for winding coils of various dimensions.

3,635,261

METHOD AND APPARATUS FOR PACKAGING PRODUCTS WHICH ARE TO BE STORED SEPARATELY BUT DISPENSED SIMULTANEOUSLY

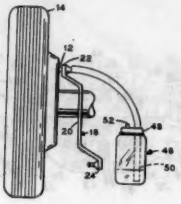
Bruno Morane, Paris; Charles Paoletti, Aulnay Sous Bois; Louis Merrien, Fontenay Sous Bois; Manlio Maurelli, Vaujours, and Robert Sathicq, Villepinte, all of France, assignors to L'Oreal, Paris, France

Filed July 25, 1969, Ser. No. 844,841
Claims priority, application France, Aug. 1, 1968, 161436; Dec. 5, 1968, 176871
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—3 2 Claims



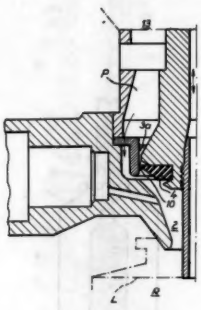
A dispenser for packaging two products which must be stored separately but mixed when dispensed, said dispenser comprising an outer container and an inner container within said outer container, said inner container being provided with closure means which opens in response to a difference between the pressure in said outer container and that in said inner container, and means for creating such a pressure difference.

3,635,262
APPARATUS FOR BLEEDING HYDRAULIC LINES
Ray M. Stebbins, 3847 Eggeman Ave., Toledo, Ohio
Filed Dec. 15, 1969, Ser. No. 884,835
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—98 **8 Claims**



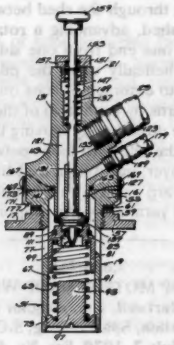
A wrench for bleeding brake systems has a nipple extending from an end thereof to which a flexible tube and a receptacle are connected. Hydraulic fluid in the brake lines is collected through the nipple and the tube into the receptacle. The nipple can be permanently attached to the wrench and the flexible tube can be connected to the nipple so that the wrench, nipple, tube, and receptacle are used as a system and need not be disconnected in order to manipulate the wrench.

3,635,263
APPARATUS FOR FILLING BOTTLES AND SIMILAR RECEPTACLES WITH LIQUID
Heinz Jordon, Dortmund-Wambel, Germany, assignor to Holstein & Kappert Maschinenfabrik Phoenix GmbH, Dortmund, Germany
Filed Sept. 25, 1969, Ser. No. 863,413
Claims priority, application Germany, Sept. 26, 1968, P 17 82 642.5
Int. Cl. B67c *3/06*
U.S. Cl. 141—286 **3 Claims**



A bottle-filling apparatus includes a filling head whose outlet is to be placed in communication with the interior of a bottle or similar receptacle. Annular valve seat surrounds the internal liquid-conveying passage of the filling head, and a valve member is movable into and out of engagement with the valve seat between a valve-opening and a valve-closing position. A venting conduit is carried by the valve member coaxially therewith and extending therethrough and has an inlet opening which communicates with the interior of the bottle when the outlet of the filling head similarly communicates with the bottle. The venting conduit serves to vent gas from the interior of the receptacle in response to admission of liquid into the latter until such time as the level of liquid rises to and closes the inlet opening whereupon a cushion of compressed gas develops above the liquid level and prevents continued flow of liquid into the bottle. Throttling means is provided which defines two narrow annular gaps, spaced axially from one another, in the interior of the liquid passage of the filling head, serving to prevent the compressed gas of the cushion from penetrating and escaping through the liquid contained in the passage.

3,635,264
FUELING MEANS
Hudson M. Milburn, Peterborough, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr. 27, 1970, Ser. No. 32,311
Int. Cl. B67d *5/04*
U.S. Cl. 141—291 **12 Claims**

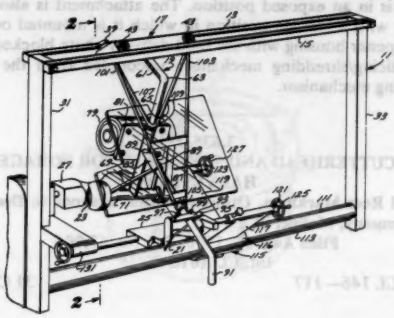


A fuel supply system including a fuel storage container communicating through an air-vapor conduit and a fuel conduit with a connector including a male member having an end part adapted for insertion into the bore of a valve housing included in a fuel tank. The means for supporting and moving said plunger includes a first passage connected to the fuel conduit and terminating at the end part together with a second passage communicating with the air-vapor conduit and communicating with the end part. The connector further includes a plunger which is supported for engagement, when the end part is inserted into the bore, with a piston which is movable in the valve housing relative to a position preventing flow to or from the interior of the fuel tank. The plunger is further supported for movement between a first position wherein the passages in the connector are sealed against fluid flow and a second position spaced from the end part, whereby the piston is displaced to a position affording communication between the fuel tank interior and the fuel and air-vapor passages and thereby also with the fuel storage container.

3,635,265
COPYING LATHE
Jose L. Cortez, 9050 East Jeff St., Bellflower, Calif.
Continuation-in-part of application Ser. No. 755,302, Aug. 26, 1968, now abandoned. This application Feb. 5, 1970, Ser. No. 8,897
Int. Cl. B23b *3/28*
U.S. Cl. 142—38 **2 Claims**

A copying lathe having a first support for supporting and rotating a workpiece and a second support for supporting a template. A horizontal track is supported centrally above the first and second supports and mounts a freewheeling truck

which has a carriage pivotally suspended therefrom. Mounted on the lower end of the carriage is a cutting blade and a follower for tracing along the profile of the template. A



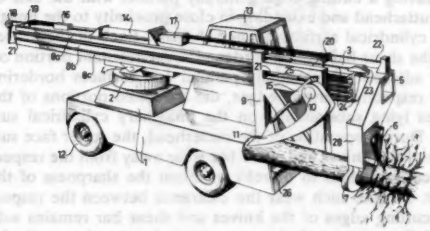
handle projects from the carriage whereby the lathe operator may pull the carriage longitudinally to trace the follower along the profile of the template to cut the workpiece to the desired shape.

3,635,266

PROCESS AND APPARATUS FOR DEBRANCHING FELLED TREES

Erik Helmer Eriksson, Soderhamn, Sweden, assignor to Mo och Domsjo Aktiebolaget, Ornskoldsvik, Sweden

Filed Nov. 20, 1969, Ser. No. 878,469
Claims priority, application Sweden, Nov. 21, 1968, 15826/68
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z **34 Claims**



A method is provided for debranching felled trees at a high rate of speed, which comprises moving the tree in a longitudinal direction towards a debranching device, while simultaneously moving the debranching device in an opposite longitudinal direction, and debranching the tree in the course of such movement.

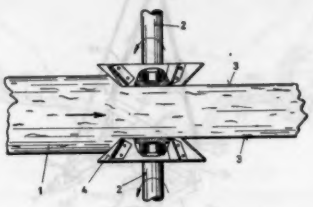
Apparatus is provided for debranching felled trees, which comprises, in combination, a pair of beam members movable towards and away from each other; means for effecting such relative movement; tree-gripping means and debranching means attached to one beam member, and arranged, respectively, to grasp the tree trunk and to remove branches from the trunk; tree feed means movably attached to the other beam member, and arranged to move along the beam member; tree-gripping means attached to the tree feed means, and arranged to grasp the tree trunk; and means for moving the tree feed means simultaneously with and in a direction opposite to the direction of the debranching means.

3,635,267

CUTTING HEAD FOR PROFILE CHIPPING OF LOGS

Alfred Reuter, Oberkirch, Baden, Germany, assignor to Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck", Oberkirch, Baden, Germany

Filed June 20, 1969, Ser. No. 835,105
Claims priority, application Germany, Mar. 15, 1969, P 19 13 295.7
Int. Cl. B27c *1/08*
U.S. Cl. 144—118 **2 Claims**



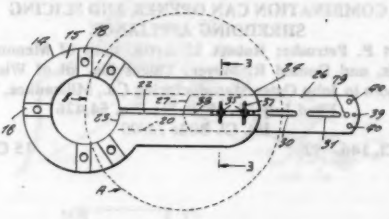
In a rotary cutting head for chipping longitudinally moving logs by engagement on the side of a log with the rotary axis of the cutterhead extending transversely to the logs; a log support member mounted within the cutting head for free rotation relative to the head and for engagement against the surface of the log to reduce the friction between the support member and the log.

3,635,268

MULTIJOB ROUTER GUIDE KIT

Henry G. Lange, 1620 Bayview Ave., Bronx, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,086
Int. Cl. B27c *5/10*
U.S. Cl. 144—134 D **1 Claim**



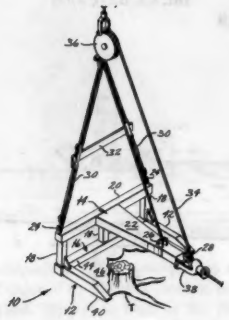
A router subbase attachment to the base of the router, the subbase having an annular attaching portion and a radial arm carrying a main guide track longitudinally adjustable thereon by means of plural bolt and slot connections. The main guide track is provided with pin receiving openings and may have detachably affixed thereto guide track extensions. A trammel pin unit embodying a pin and circular base can be employed wherein the base is adhesively secured to the surface of the workpiece thus precluding the need for driving a pin into the workpiece. Various types of contour guide elements may be attached to the outer end of the main guide track and the coupling connection consisting of interfitting coupling bar and dovetailed recess respectively at the forward end of the guide track extension and at the rear of the main guide track is such that the dovetailed recess may have positioned therein a contour guide element having a coupling head. In addition the base of the router which is annular is provided with a slot so that a trammel pin may be located between the circumferential confines of the base so as to enable to cutting of a small diameter circle.

3,635,269

METHOD AND MEANS FOR CUTTING TREES

John H. Price, 163 Frey Lane, Belleville, Ill.

Filed Dec. 31, 1969, Ser. No. 889,532
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC **11 Claims**



A tree cutter includes a frame and means on the frame for connecting it to a prime mover for movement in the direction of a tree. A blade is provided on the frame and includes a serrated cutting edge formed by an indentation in one of the blade's margins.

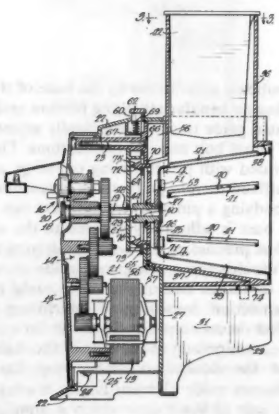
The blade is moved in the direction of a tree so that one end of the serrated cutting edge engages the tree and slices into it. The serrated edge is dragged along the tree until the tree is embraced within the innermost portion of the indentation whereupon the momentum of the blade will cause a shearing force to be applied to the tree.

3,635,270

COMBINATION CAN OPENER AND SLICING SHREDDING APPLIANCE

Robert P. Petroske; Robert L. Artin, both of Menomonee Falls, and Donald R. Meyer, Thiensville, all of Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.

Filed July 13, 1970, Ser. No. 54,426
Int. Cl. B02c *18/00*
U.S. Cl. 146—92 **15 Claims**



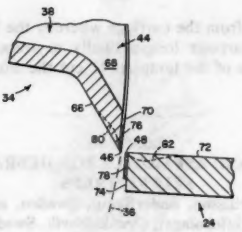
A can opener having combined therewith apparatus for shredding and slicing foods. The slicing and shredding apparatus consists of a detachable attachment which may be mounted in either of two alternative positions on the can opener housing. In one of the alternative positions, the slicing and shredding attachment is drivingly coupled to the can opener mechanism and the chute through which food is supplied is in an exposed position. The attachment is also provided with a storage position in which it is mounted on the can opener housing with the food delivery chute blocked and the slicing/shredding mechanism uncoupled from the can-opening mechanism.

3,635,271

CUTTERHEAD AND SHEAR BAR FOR FORAGE HARVESTERS

David Rees Markham, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 26, 1970, Ser. No. 67,006
Int. Cl. A01d *55/18*
U.S. Cl. 146—117 **31 Claims**



A forage harvester reel-type cutterhead having a plurality of angularly spaced knives with cutting edges on the outer periphery thereof and defining an imaginary cylindrical surface as the cutterhead rotates. The knives coact with a stationary shear bar to reduce crop material fed into the cutterhead housing by conveyor means on the harvester, the shear bar having a cutting edge generally parallel with the axis of the cutterhead and extending in close proximity to the imaginary cylindrical surface defined thereby. Each of the knives and the shear bar have a hardened, wear-resistant portion on their adjacent, substantially parallel end surfaces bordering their respective cutting edges, the hardened portions of the knives lying substantially on the imaginary cylindrical surface. During operation of the cutterhead, the softer face surfaces of the knives and shear bar wear away from the respective cutting edges to thereby maintain the sharpness of the latter. Despite such wear the clearance between the respective cutting edges of the knives and shear bar remains substantially constant during operation due to the particular configuration and relationship of the respective end surfaces of the knives and shear bar.

3,635,272

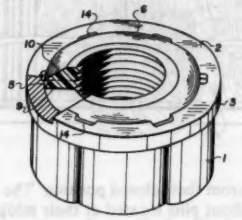
THREADED FASTENING DEVICE AND METHOD OF MAKING THE SAME

Harry Scheffer, Brackwede, Germany, assignor to Helmut Rieke, Thal u. Bad Pyrmont, Germany

Continuation-in-part of application Ser. No. 764,264, Oct. 1, 1968, now Patent No. 3,520,342. This application Nov. 6, 1969, Ser. No. 874,579
Int. Cl. F16b *39/34*
U.S. Cl. 151—7 **7 Claims**

A cylindrically enlarged end of an otherwise hexagonal steel nut has a shallow cylindrical depression in its radial seating face. Shallower recesses extend radially outward from the depression which partly receives a nylon ring in the relaxed condition of the latter. The portion of the ring which projects from the depression is frustoconical and its volume

is not greater than the joint capacity of the shallower recesses. When used on a bolt for fastening a work piece receiving the bolt in an oversized opening, the ring material quickly seals any gaps between the bolt, the workpiece and the nut. Any excess ring material flows into the recesses and



none is extruded into the narrowing gap between the seating face of the nut and the workpiece. The important conical shape of the ring is maintained during manufacture of the fastener by injection molding the ring, inserting it in the nut and exposing the latter to induction heating whereby only the surface of the ring is fused and bonded to the metal.

3,635,273

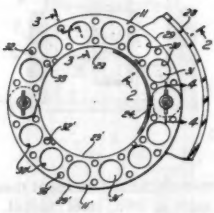
FLAT TIRE SAFETY ROLLER AND WARNING INDICATOR

Theodore C. Patecell, 3352 156th St., Flushing, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,122

Int. Cl. B60c *17/04*

U.S. Cl. 152—158 **28 Claims**



A safety insert or roller for inflatable tires comprising a plurality of arcuate members having detachable and pivotal clamping engagement adapted to form a ring closely engaging the drop center of a tire mounting rim and protruding beyond said rim a substantial distance in the direction of the tread of an inflated tire mounted thereon. At least the inner and outer peripheries of the assembled ring are of rigid plastic material, preferably having lubricant properties, such for example as high-density polyethylene. Connecting structure between said inner and outer peripheries can be of the same material or a different material such as formed metal, and is fashioned to provide a combination of low weight and high tensile and compression strength. Overlapped end portions of the arcuate members when loosely joined together permit relative swinging movement facilitating assembling the device within a tire while half mounted on a rim; and the fastening means for adjacent ends of the arcuate members including bevelled means for providing circumferential clamping of the assembled ring in the tightening thereof.

3,635,274

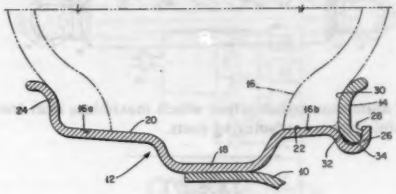
VEHICLE RIM AND SIDE RING CONSTRUCTION

John N. Bradley, Grosse Pointe Woods, and Peter N. Pentescu, Warren, both of Mich., assignors to The Budd Company, Philadelphia, Pa.

Filed Nov. 24, 1969, Ser. No. 879,228

Int. Cl. B60d *25/06*

U.S. Cl. 152—410 **2 Claims**



A wheel rim and side ring combination to provide a stronger wheel for providing more support for a tire on the rim and reducing stresses in the rim gutter.

3,635,275

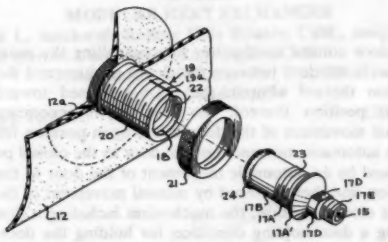
TRACTOR TIRE VALVE ASSEMBLY

Melvin Lee Davis, Stony Creek, Va., and Ray L. Cutchins, 305 N. Church St., Lake City, S.C.

Filed Dec. 15, 1969, Ser. No. 885,106

Int. Cl. B60c *29/00*

U.S. Cl. 152—429 **2 Claims**



A tractor tire valve assembly to facilitate withdrawal and return of liquid from or to the tire, including a tubular sleeve forming a housing collar, a valve core carrier threaded into the bore of the sleeve, and a valve core unit supported in the carrier. The sleeve has an externally threaded outer end sized to be intercoupled with a standard hose coupling and the diameter of the bore in the sleeve approximates that of a standard hose.

3,635,276

WASTE DISPOSAL SYSTEM

Harry W. Green, and Melvin L. Dietrich, both of North Olmsted, Ohio, assignors to The Standard Products Company, Cleveland, Ohio

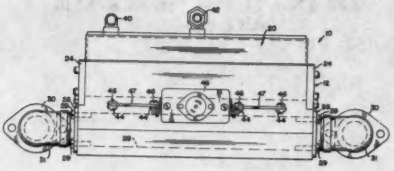
Filed June 23, 1969, Ser. No. 835,615

Int. Cl. B01d *1/00*

U.S. Cl. 159—29 **2 Claims**

A combined exhaust manifold and boiler unit for employing the hot exhaust gases from an engine to vaporize liquids such as the effluent from a septic tank with secondary heat-

ing coils available for vaporizing the liquid when the engine is not running. The unit either may be an integral or split housing of aluminum construction which maximizes heat transfer and minimizes manufacturing costs.

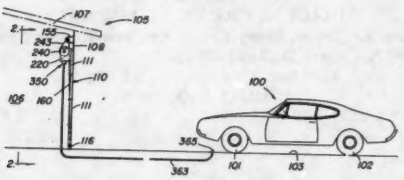


3,635,277

DOOR CONTROL MECHANISM

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Oct. 29, 1969, Ser. No. 872,130
Int. Cl. E05f *11/54, 13/00*
U.S. Cl. 160—191 **43 Claims**



A door control mechanism for controlling the movement of a sectional door between the closed position and the open position thereof wherein the door is biased towards the closed position thereof, the mechanism accommodating manual movement of the door to the open position followed by an automatic movement of the door to the closed position followed by an automatic movement of the door to the open position and then followed by manual movement of the door to the closed position, the mechanism including a first latch having a door-holding condition for holding the door in its open position and having a door-releasing condition for releasing the door and allowing it to move to the closed position thereof, a second latch mechanism having a device-connecting condition for connecting an energy-storing device to the door thereby automatically to move the door to the open position thereof, and having a device-holding condition for maintaining the energy-storing device out of operative connection with the door, a trigger for selectively operating the first and second latch mechanisms, and a selector for selectively rendering the trigger operable to change the condition of only one of the first and second latch mechanisms at one time.

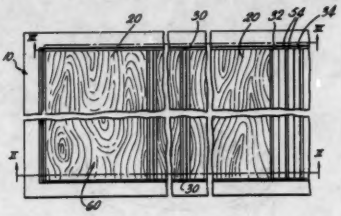
3,635,278

COLLAPSIBLE BARRIER MEMBER

Emil J. Bocade, Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

Filed June 16, 1969, Ser. No. 833,578
Int. Cl. E05d *1/02*
U.S. Cl. 160—206 **17 Claims**

A collapsible barrier formed of inflexible panels joined to living hinges at each end thereof, each living hinge being separated from the hinge of the adjacent panel by a rib, so that each hinge is bent at the the "open" position not more than 90° from the "closed" position or vice versa. The hinge is given a memory by extruding it from plastic along with the panels, while in a position in which the panels are angled 45°, approximately, from their closed position. The panels may be either pivoted about pins located at their midpoints or about pins spacing every other pair of adjacent panels. These pins are constrained to move in a linear track.

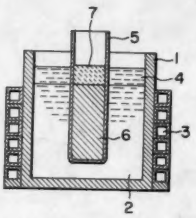


3,635,279

METHOD OF CASTING AN INGOT IN A THIN-WALLED DEFORMABLE STEEL MOULD

Yonosuke Matsunaga, No. 8, 1-chome, Nishitobe, Nishi-ku, Yokohama; Eiichi Kato, and Seiji Tobisawa, both of Tokyo, all of Japan, assignors to said Matsunaga, by said Kato and said Tobisawa

Filed Oct. 28, 1969, Ser. No. 871,908
Claims priority, application Japan, Oct. 28, 1968, 43/78035
Int. Cl. B22d *7/00, 27/02, 27/08*
U.S. Cl. 164—49 **4 Claims**



A method of manufacturing an ingot made of a high-melting point metal such as iron, steel, nickel, cobalt and alloys thereof, in which a thin-walled mould is vertically and movably supported by a molten bath contained in a bath tank and a molten metal is poured into said mould to move it downwards into said molten bath in response to an increase of the amount of the molten metal poured in the mould. The molten metal poured in the mould is cooled and coagulated upwards in succession from the lower end of the mould, thereby forming an ingot in the mould.

3,635,280

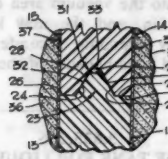
SELF-ALIGNED MULTIPART COMBUSTIBLE CASTING PATTERN AND METHOD OF MAKING SAME

John T. Parsons, 205 Wellington, Traverse City, Mich.

Filed Nov. 7, 1969, Ser. No. 874,930
Int. Cl. B22c *7/02*
U.S. Cl. 164—246 **4 Claims**

Combustible patterns of expanded polystyrene, carved to complex forms by the tape-controlled milling of two or more self-aligning parts, resist displacement from each other as sand is packed within and around them. Tongue-and-groove joints, formed on the mating surfaces of the parts, locate and align the parts and prevent their displacement more surely

than adhesives, which tend to cause inclusions and voids in the casting. Adhesive may be coated on the tongue-and-groove parts only, leaving adjacent margins of the mating surfaces free from adhesive; and the exterior surfaces of the



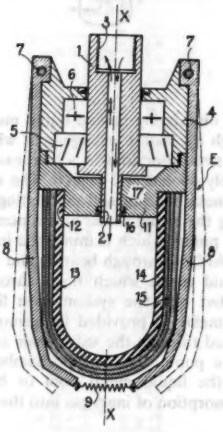
assembled pattern may be coated with a noncombustible ceramic coating. The marginal spacing of the adhesive inward from such coating permits quick dispersion of the adhesive when the molten metal is cast.

3,635,281

EXTRACTOR FOR STRIPPING PIPES AND OTHER HOLLOW PARTS FROM MOULDS AND SIMILAR OPERATIONS

Bernard Michel Comte, Nancy, and Jean-Marie Louis Philippe Gareaux, Pont-a-Mousson, both of France, assignors to Centre de Recherches de Pont-a-Mousson, Pont-a-Mousson, France

Filed May 14, 1970, Ser. No. 37,086
Claims priority, application France, May 16, 1969, 6915848
Int. Cl. B22d *29/04*
U.S. Cl. 164—404 **9 Claims**



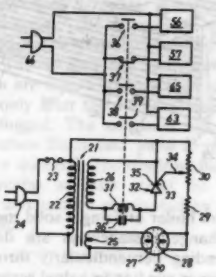
Extractor for extracting pipes from centrifugal casting moulds. The extractor has jaws capable of radially engaging the inner face of the pipe and a fluid-actuated device for urging the jaws into engagement with the pipe in opposition to spring return means. The device is so arranged that each jaw is urged into engagement independently of the other jaws. The device may be a rubber bulb inflated by the fluid or a series of radial piston and cylinder devices communicating with a common supply of fluid under pressure.

3,635,282

AIR-CONDITIONING DEVICE OF AUTOMATIC VENTILATION TYPE

Koichi Watanabe, Akashi, Japan, assignor to New Cosmos Electric Co., Ltd., Osaka, Japan

Filed June 1, 1970, Ser. No. 42,342
Claims priority, application Japan, June 5, 1969, 44/44174
Int. Cl. F28f *13/00*
U.S. Cl. 165—11 **5 Claims**



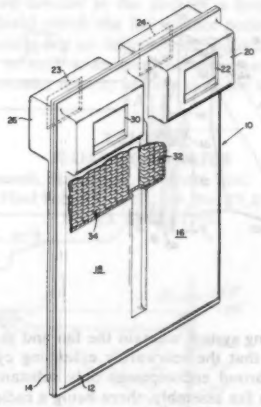
An air-conditioning device embodying means for detecting the level of contamination of air in a room, means for heating and/or cooling, an air intake and exhaust and a control device for automatically operating the air intake and exhaust to provide for either recirculation of air within the room when the contamination level is below a selected value or for exchanging air in the room when the contamination level exceeds a predetermined value.

3,635,283

MODULAR HEAT EXCHANGER

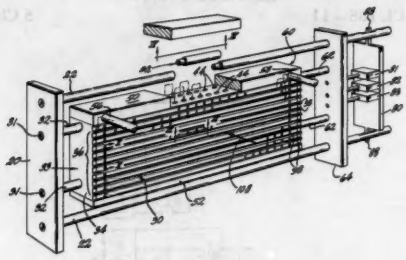
David L. Satchwell, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 17, 1969, Ser. No. 791,938
Int. Cl. G05d *23/00*
U.S. Cl. 165—37 **12 Claims**



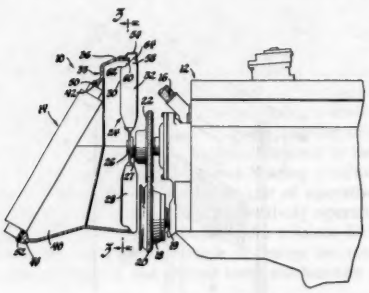
A modular heat exchanger having a core of a plurality of individual core elements supported within a separate, removable heat exchanger case.

3,635,284
FLASH BOILER
Earl W. Hoch, R.R. #3, Petoskey, Mich.
Filed May 21, 1970, Ser. No. 39,265
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 35 Claims



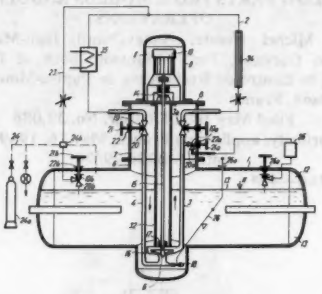
A flash steam boiler utilizing a solid metallic core wherein the heat exchange passageways are drilled, the hot gas openings extending perpendicularly through the core with the water passages winding in a dual serpentine path through the core so as to contact both sides of the metal surfaces surrounding each gas passageway. The cores can be stacked so as to exchange heat between the gas flow and the serpentine path at a plurality of discreet levels. Because the cores are metallic, the ends of at least one core in each boiler is provided with a sensing plate which is caused to move by thermal expansion of the entire core toward a plurality of microswitches controlling the operation of the boiler, each of the microswitches being activated at a different amount of thermal expansion of the core.

3,635,285
COOLING FAN
Dennis A. Davis, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,325
Int. Cl. F01b *7/02*; 416 *228*
U.S. Cl. 165—51 2 Claims



A fan-cooling system wherein the fan and shroud arrangement is such that the rearwardly extending cylindrical portion of the shroud encompasses only substantially the forward half of a fan assembly, there being a radially outwardly extending continuation formed adjacent the trailing edge of each of the fan blades and extending radially outwardly of the inner surface of the shroud, thereby effectively enlarging the fan in a given engine compartment. This causes the tip of each blade to include a generally radially outwardly extending contoured central segment intermediate two generally transversely extending forward and rear segments, both tapering slightly inwardly from their respective points of juncture with the intermediate central segment, resulting in the formation of a generally conically shaped clearance between the rear edge of the shroud and the generally radially extending central segment of the fan blades. Recirculation of air through the clearance is thus diminished, as a result of the edge of the shroud serving to directly block the air from flowing into the vacuum area created between the radiator and the fan, and the now larger diameter fan producing a radially extending circumferential "wall" of air adjacent the shroud edge because of the increased action of centrifugal force.

3,635,286
STORAGE TANK FOR LIQUID METAL
Frantisek Dubsek; Vaclav Tomes, both of Brno; Mojmir Nigrin, Jaromer, and Jiri Sobotka, Brno, all of Czechoslovakia, assignors to Prvni brnenska strojirna, Zavody Klementa Gottwalda narodni podnik, Brno, Czechoslovakia
Filed Dec. 29, 1969, Ser. No. 888,369
Int. Cl. F28f *13/06*
U.S. Cl. 165—108 12 Claims

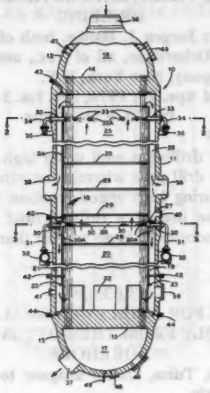


A system for circulating heated liquid metal (e.g. metallic sodium) through a conduit arrangement wherein, for example, the liquid metal functions as a heat-exchanging medium and is alternately cooled and heated. The system includes a unitary liquid metal storing and circulating device having a tank for storing the liquid metal and a pump for circulating the liquid. The pump, which is immersed in the liquid in the tank, has a liquid flow-through bearing and means for removing excess liquid metal which flows through the bearing. Valves associated with the system have liquid metal flow-through seals; means is provided for removing liquid metal which has leaked through the valve seals and returning it to the tank by the pump. The pump chamber is substantially isolated from the liquid metal pool or bath in the tank, whereby the absorption of inert gas into the liquid metal bath is minimized.

3,635,287
ONCE-THROUGH VAPOR GENERATOR
Theodore S. Sprague, Hudson, Ohio, assignor to The Babcock of Wilcox Company, New York, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,483
Int. Cl. F28f *19/00*
U.S. Cl. 165—134 5 Claims

A method and apparatus for separately introducing an auxiliary feedfluid into a shell-and-tube-type vapor generator when the flow of main feedfluid is discontinued. The auxiliary feedfluid provides the vapor for preheating the entering

main feedfluid when flow of the latter is resumed thereby reducing temperature differentials between the shell and tube



sheet metal and the entering main feedfluid so as to eliminate thermal shock.

3,635,288

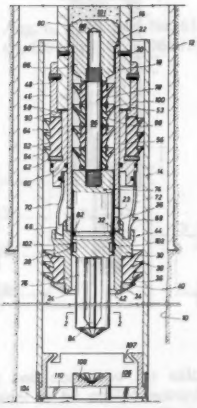
LINER-CEMENTING APPARATUS

Maurice P. Lebourg, 301 Post Oak Bank Bldg., Houston, Tex.

Filed Dec. 29, 1969, Ser. No. 888,993

Int. Cl. E21b *33/16*

U.S. Cl. 166—156 **48 Claims**



A dual-plug-cementing device has a first plug for traveling down the operating string ahead of the cement which engages a liner wiper at the bottom of the operating string. Both wiper and plug in sealing engagement travel ahead of the cement to the cementing region. An elongated portion of the plug strikes a stop in the cementing region permitting the wiper to continue downward movement relative to the plug and break the seal permitting the cement to flow past the plug.

3,635,289

WELL CEMENTING WITH A SETTABLE WATER-IN-OIL EMULSION

John C. Van Dyk, Oklahoma City, Okla., assignor to Woods Research & Development Corp., Oklahoma City, Okla.

Filed Aug. 15, 1969, Ser. No. 850,629

Int. Cl. E21b *33/138*

U.S. Cl. 166—295 **12 Claims**

Cavities such as cracks and various other voids in subsurface formations are sealed such as for example, to stop lost circulation of drilling fluid in a well bore by a process wherein an emulsion having a continuous phase containing a polymerizable unsaturated polyester component, a discontinuous phase of water, and a catalyst system for the polymerizable component is forced into and allowed to set within the cavity. The catalyst and inhibitor therefor within the catalyst system are selected so that the emulsion begins to gel and set up only after the emulsion reaches the cavity which is to be plugged. The emulsion will set up in the presence of formation fluids and yield a very hard, high-strength cementlike material. The resulting hardened cementlike material contains at least about 60 percent water dispersed therein, and can be penetrated by a drill without cracking or chipping.

3,635,290

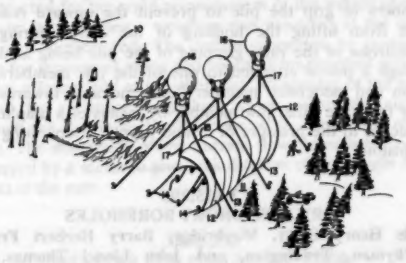
APPARATUS FOR FIGHTING FOREST FIRES

James L. Schneider, 223 W. Wilshire Ave., Fullerton, Calif.

Filed Mar. 7, 1969, Ser. No. 805,150

Int. Cl. A62c *3/00*

U.S. Cl. 169—1 **4 Claims**



Apparatus for fighting forest fires in which a plurality of large sails are erected in the path of a forest fire thereby forming a shield which the fire cannot penetrate. The sails are erected using hot air balloons and the individual sails are constructed in such a manner that the heat and wind are trapped thereunder thereby helping keep the sails erect.

3,635,291

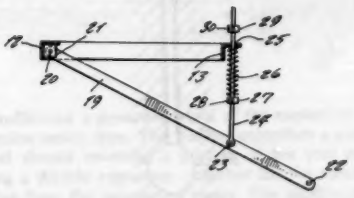
FLOATING CARRIER

Jerry J. Tomanek, Star Route, Truscott, Tex.

Filed Feb. 13, 1970, Ser. No. 11,186

Int. Cl. A01b *21/08*

U.S. Cl. 172—573 **1 Claim**



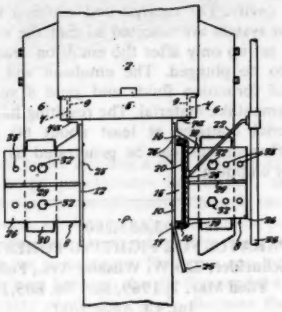
A frame designed to be hitched to a tractor, the frame supporting a plurality of pairs of bars connected at their one

ends pivotally free to the frame, the opposite ends of the bars depending diagonally downwardly and being supported springingly to the frame, and the ends of the bars being adaptable to support a large rotary hoe.

3,635,292
PILE GRIPS

Anthony Edward Walter Last, Stowmarket, England, assignor to The British Steel Piling Co., Limited, Clayton Ipswich, Suffolk, England

Filed July 17, 1970, Ser. No. 55,700
Int. Cl. E02d *7/00*
U.S. Cl. 173—132 **9 Claims**

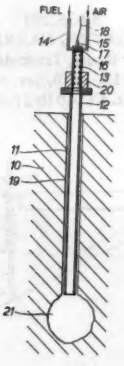


A fluid-operated pile driver incorporating a pair of jaw members to grip the pile to prevent the upward reaction force from lifting the housing of the driver during the downstroke of the ram, gripping of the pile being achieved through a piston attached to one of the jaw members, the piston and associated member being movable towards and away from the other jaw member by means of a diaphragm, subjected to the pressure of a fluid supply, cooperating with the piston.

3,635,293
DRILLING SHORT BOREHOLES

Denis Henry Desty, Weybridge; Barry Herbert Francis Whyman, Teddington, and John Lionel Thomas, Ottershaw, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Aug. 26, 1969, Ser. No. 853,044
Claims priority, application Great Britain, Sept. 16, 1968, 43,937/68
Int. Cl. E21b *7/00*
U.S. Cl. 175—4.5 **3 Claims**



Short boreholes, e.g., shallow wells for piles and horizontal holes for pipelines, are drilled by directing a series of explosion waves at the closed end of the borehole. This compacts material at the walls thereby extending the hole.

3,635,294
DRILL PIPE VIBRATION CONTROL IN ROTARY DRILLING

Joseph H. Faulk; Jurgen J. Hanke, both of Dallas, and John H. Striegler, Richardson, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

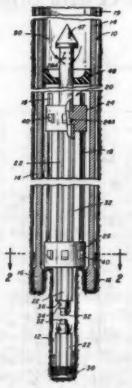
Filed Apr. 29, 1970, Ser. No. 33,084
Int. Cl. E21b *21/04*
U.S. Cl. 175—65 **7 Claims**

A method for drilling a well using high-speed rotation of the drill bit and drill pipe wherein catastrophic vibration of the drill pipe during high speed rotation is at least in part prevented by the use of a drilling fluid whose ratio scar width/(plastic viscosity)$^{1/2}$ is no greater than about 4.

3,635,295
APPARATUS FOR DRILLING A SMALL BOREHOLE DOWNWARDLY FROM THE BOTTOM OF A LARGE BOREHOLE

James H. Cobbs, Tulsa, Okla., assignor to Fenix & Scisson, Inc., Tulsa, Okla.

Filed Dec. 2, 1969, Ser. No. 881,394
Int. Cl. E21b *11/00*
U.S. Cl. 175—257 **7 Claims**



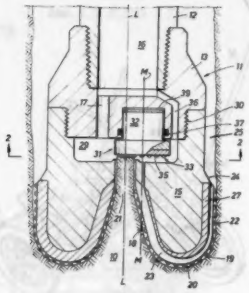
A small borehole drilling tool, lowered into a large borehole tubular drilling bit, includes a drill shaft interconnected to the large borehole drilling bit through driving drums for common rotation therewith. The small borehole drilling tool further includes upwardly of the drill shaft a coaxial neck, and an annular seal interposed between the neck and the inner wall of the large borehole drilling bit to form a drilling fluid chamber which receives and retains drilling fluid which in turn produces a downward thrust force on the upper surface of the annular seal to force the small borehole drill shaft downwardly into the earth during rotation thereof.

3,635,296

DRILL BIT CONSTRUCTION

Maurice P. Lebourg, 3700 Greenway Plaza, Suite 428, Houston, Tex.

Filed June 4, 1970, Ser. No. 43,508
Int. Cl. E21b 9/16; E21c 13/02
U.S. Cl. 175—404 16 Claims



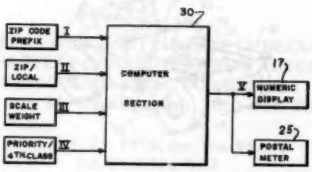
A drill bit construction, particularly adapted to rotary drill bits employing diamonds or like cutting elements includes a secondary cutting means disposed within the bit body and independently rotatable with respect to the bit body. The cutting face of the secondary cutting means is exposed to and overlies that portion of the borehole below the axis of rotation of the bit, and will efficiently drill that portion of the formation beneath the axis of rotation of the bit, which in conventional bit construction would be exposed to cutting elements having a velocity approaching zero.

3,635,297

POSTAGE CALCULATOR

Roger F. Salava, 1214 West Haven Drive, Arlington Heights, Ill.

Filed Aug. 6, 1970, Ser. No. 61,760
Int. Cl. G01g 23/42; G06f 15/20
U.S. Cl. 177—5 11 Claims



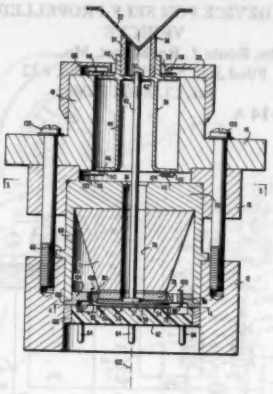
A postal scale and computer for calculating the exact postage for a parcel to be mailed according to its weight, destination zip code, and class of handling. The computer includes a read only memory which stores the postal zone information according to the first three digits of the destination zip code, and the postage rate information according to the combined parcel weight, zone and class of handling. The computer also includes a control logic which searches the memory, first for the proper zone as established by an upper limit prefix for a series of zip code numbers falling within the same zone, and secondly for the proper rate for the weight of the parcel being mailed to the zone determined. The memory is broken down into separate sectors, each mounted on an easily replaceable circuit board to accommodate for changes in postal rates and for different points of mailing origin.

3,635,298

FORCE FEEDBACK MASS BALANCE

Walter P. Kistler, Clarence, N.Y., assignor to Kistler Instrument Corporation, Clarence, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,667
Int. Cl. G01g 3/14
U.S. Cl. 177—210 11 Claims



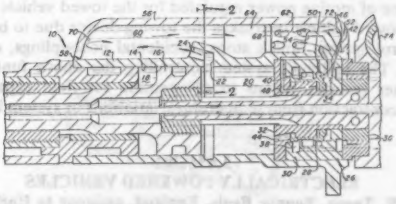
Disclosed is a force feedback mass balance particularly constructed for the rapid measurement of the weight of small objects. It comprises a weighing pan mounted at the upper end of a vertical rod. The rod is supported by tangential wires for movement along and about its longitudinal axis and carries a forcer coil at its other end. Movement of the rod is sensed by a capacitive pickoff which varies the current through the coil in such a direction as to oppose the movement. The magnitude of the current flow through the coil is displayed by a meter to give an indication of the weight of an object in the pan.

3,635,299

MUFFLER FOR PNEUMATIC TOOL

Roy J. Hayes, Denver, Colo. assignor to Gardner-Denver Company, Quincy, Ill.

Filed Apr. 20, 1970, Ser. No. 29,982
Int. Cl. F01n 1/08
U.S. Cl. 181—36 A 5 Claims



A muffler for a pneumatic tool of the expansible chamber percussion motor type. The muffler comprises a substantially integral shroud covering a portion of the tool casing and forming a double expansion chamber for the motive air exhausting from the percussion motor. The muffler shroud includes a plurality of openings for discharging exhaust air from the expansion chamber. Exhaust ports opening from the percussion motor into the double expansion chamber are ar-

ranged with respect to the exhaust openings in the shroud to provide substantial retroverted flow of the exhaust air upon entering and leaving the muffler. An exhaust flow stream from the percussion motor distributing valve is also introduced into one of the muffler expansion chambers and interacts with the percussion motor exhaust air to produce a synergistic noise reduction effect.

3,635,300

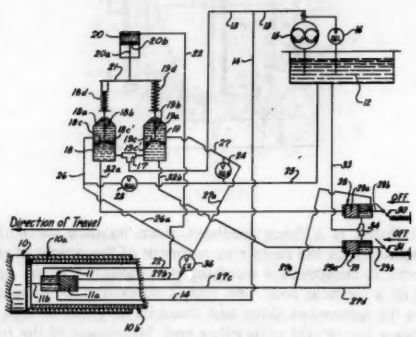
CONTROL DEVICE FOR SELF-PROPELLED TOWED VEHICLE

Joseph B. Gibbs, Route 1, Rocheport, Mo.

Filed Jan. 5, 1970, Ser. No. 622

Int. Cl. B60d *7/00*

U.S. Cl. 180—14 A **5 Claims**



A device for controlling the operation of a self-propelled towed vehicle has an extensible drawbar with two telescoping parts capable of relative movement therebetween. A piston of a master hydraulic cylinder is fixedly attached to one of the drawbar parts and is positionable in accordance with the relative movement thereof. Each towed vehicle has an associated master cylinder which effects the control of the movement of one or more pistons of slave hydraulic cylinders, which in turn control the hydrostatic transmission and source of motive power with its respective towed vehicle. Hydraulic linkages are provided with respect to each drawbar master cylinder and the slave cylinders to insure increased motive power as the load in towed vehicle increases. In this regard, the hydrostatic transmission is controlled and the source of motive power regulated for the towed vehicle when the towed vehicle overtakes the towing device due to broken control springs, quick stops, accidental uncouplings, or the like. The hydraulic system controlling the above functions further includes means to compensate for fluid expansion and contraction from temperature variations or system leaks.

3,635,301

ELECTRICALLY POWERED VEHICLES

Ian V. Tuson, Bognor Regis, England, assignor to Harlequin Manufacturing Limited, Christchurch, Hampshire, England

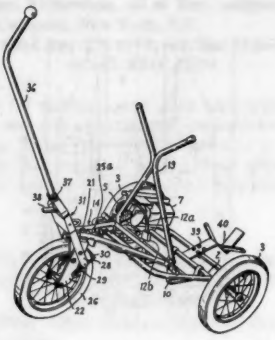
Filed Oct. 20, 1969, Ser. No. 867,644

Claims priority, application Great Britain, Feb. 19, 1969, 9022/69

Int. Cl. B62d *61/00, 1/00, 51/00*

U.S. Cl. 180—19 H **4 Claims**

The invention relates to a three-wheeled electric golf trolley, two rear wheels of which are driven via separate free wheel mechanisms by a battery-powered electric motor. The single front wheel is steerable by a handle intended to be grasped by a pedestrian, the inclination of the handle being



adjustable, and being employed to control the operation of the motor.

3,635,302

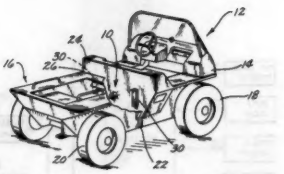
VEHICLE BODY COUPLING

John A. Rogers, and Fredrick R. Bossard, both of Fort Dodge, Iowa, assignors to Standard Engineering Co., Inc., Fort Dodge, Iowa

Filed Dec. 19, 1969, Ser. No. 886,473

Int. Cl. B60d *1/00*

U.S. Cl. 180—44 R **10 Claims**

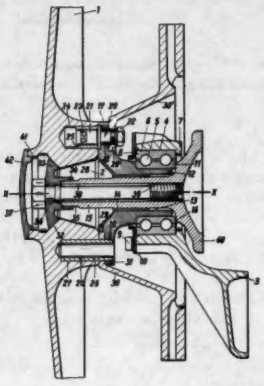


A vehicle having front and rear body units rotatably connected by a body coupling for rotational movement about an axis parallel to the longitudinal axis of the vehicle. The coupling includes a hollow male member carried on the rear wall of the front body unit and extends through a sleeve carried on the front wall of the rear body with each being rigidly connected to their respective body walls by mounting plates. A plurality of bolt members extend outwardly from the inner peripheral surface of the hollow male member and extend through an end plate adapted to limit longitudinal movement of the sleeve on the male member. Wear plates are provided between the adjacent front and rear body walls and the end plate may be tightened against the sleeve as it is appropriate to compensate for wear on the wear plates.

3,635,303
BEARING FOR WHEELS, PARTICULARLY AUTOMOTIVE VEHICLE WHEELS

Richard Hetmann, Tamm; Erich Stotz, Rommelshausen; Ludwig Asel, Korntal, and Karl Arnold, Korb, all of Germany, assignors to Dr. Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Oct. 21, 1969, Ser. No. 868,148
Claims priority, application Germany, Nov. 2, 1968, P 18 06 566.2
Int. Cl. B60k *17/00*
U.S. Cl. 180—75 29 Claims



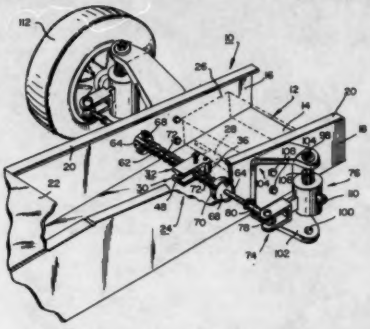
A bearing for wheels, particularly for automotive vehicle wheels, wherein the wheel bearing inserted in a wheel carrier is held between a wheel spindle associated with a clamping disk and a hub, which has screwless catches disposed radially with respect to the wheel axis, for the rim. The bearing is a multiple-row antifriction roller bearing, the outer ring of which is inserted in a recess of the wheel carrier and the inner ring being clamped between the wheel spindle and the hub. The wheel spindle is tensioned with respect to the inner ring of the bearing by means of an expanding bolt extending in the direction of the wheel axle and the abutment for the expanding bolt is the clamping disk resting in the rim.

3,635,304
RESETTABLE LOAD LIMITING SAFETY DECOUPLERS FOR A REMOTELY CONTROLLED TOY AUTOMOTIVE VEHICLE STEERING MECHANISM

Isaac Hills, c/o My-Toy Company Inc., 944 Third Ave., Brooklyn, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,678
Int. Cl. B62d *7/00*
U.S. Cl. 180—79 24 Claims

A remotely controlled locally powered steering mechanism for a toy automotive vehicle utilizing a servomotor for actuating the steering train, wherein there is interposed in the train between the servomotor and the steerable wheels a resettable decouplable device for limiting the force transmitted from the servomotor, said mechanism comprising the resilient arms of a yoke having facing ribs on the interior of the yoke arms extending along the length of the vehicle and jointly engaging opposed portions of a neck in a transversely disposed tie rod, the ends of which are connected to steering knuckles that oscillate steering arms. The yoke arms are adjustably spring biased toward one another to enable the connection between the yoke and tie rod to be selectively adjusted in a fashion such that when the axial impact exerted on the tie rod due to a steerable wheel striking a heavy or stationary object exceeds the maximum force exertable by the servomotor, the arms of the yoke spread and ride off the neck and onto the tie rod whereby the servomotor is not damaged. A restoring spring automatically returns the ribs to their neck-engaging position when the impact force on the tie rod is diminished to less than the maximum force exertable by the servomotor to thereby reestablish a preset coordination between the servomotor and the steerable wheels. Because the yoke arms and ribs run longitudinally of the vehicle chassis, the ribs accommodate movement of the tie rod in a front-to-back direction as the servomotor is actuated

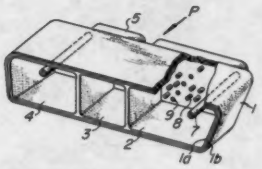


without affecting the coordinated control of the steerable wheels. Each steering knuckle includes a ball engaged by an oppositely disposed pair of seats that are biased toward one another with a force greater than the maximum force exerted by the servomotor; moreover axial movement of the tie rod is limited so that in the case of a severe wheel turning shock a ball steering knuckle will decouple after the tie rod has reached the extreme of its travel and thus prevent damage to the kinematic steering train, or to a kingpin, kingpin bracket, steering arm or steering wheel.

3,635,305
HOUSING FOR ENCLOSING INSTRUMENTS AND THE LIKE TO BE MOUNTED ON FRONT INSTRUMENT PANEL OF COMPARTMENT OF AUTOMOBILE

Takeshi Kunishi; Yoshihiro Kawade, both of Kariya-shi; Koiti Yamakita; Ryozo Takaki, both of Aichi-ken, and Katuhiro Yamanaka, Hekinan-shi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 11, 1969, Ser. No. 884,271
Claims priority, application Japan, Dec. 17, 1968, 43/92905
Int. Cl. B60k *37/00*
U.S. Cl. 180—90 2 Claims



A housing for enclosing instruments, such as meters, gages, a radio, control units for an air-conditioning system, etc. and the like in the partitioned chambers integrally formed with the main body of the housing made of a synthetic resin. The housing further includes an air duct integrally formed therewith and made of a foamed synthetic resin so as to have

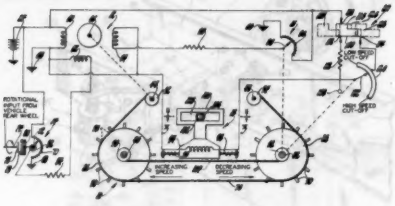
a spongelike structure, and a plurality of electric conductors embedded in the walls of the main body for electrically connecting said instruments and the like with the exterior and with each other.

3,635,306

VEHICLE SPEED INDICATOR AND CONTROLLER

Judson S. Davis, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 8, 1970, Ser. No. 1,422
Int. Cl. B60k *31/00*
U.S. Cl. 180—110 7 Claims



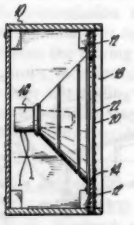
A vehicle speed indicator and controller having a drive motor with differential field windings to position a constant force extension spring between two pulleys to indicate the vehicle speed. A potentiometer supplies a signal corresponding to vehicle speed to one of the differential field windings to cause rotation of the drive motor output shaft. Another potentiometer supplies a signal corresponding to the position of the constant force extension spring to the remaining differential field winding to stop rotation of the drive motor output shaft. The speed controller has a tape having magnetic properties positioned by the speed indicator. At the control speed, an electromagnet is energized to attach to the tape which in turn transfers movement of the speed indicator to a power unit to control a vehicle throttle.

3,635,307

GRILL CLOTH FOR LOUDSPEAKER

Frank L. Lewis, 2122 N. 26th St., Tacoma, Wash.

Filed Jan. 6, 1970, Ser. No. 986
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B 5 Claims



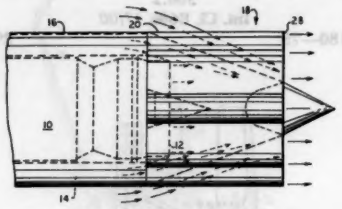
An enclosure for a loudspeaker provided with a frame spaced therefrom and supporting a cloth which is porous and is provided with a plurality of closely spaced elongated strips of metallic foil secured to the cloth at one end. When sound is emitted from the enclosure, the cloth moves and the strips flutter and glitter.

3,635,308

SOUND SUPPRESSION SYSTEM

Victor Millman, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed July 3, 1969, Ser. No. 838,947
Int. Cl. B64d *33/06*; F01n *1/14*
U.S. Cl. 181—33 HC 7 Claims



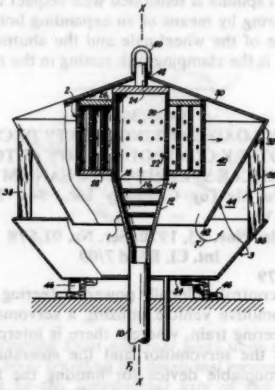
System includes a shroud immediately downstream of turbine exhaust nozzle to form confined zone to receive turbine discharge. Conduit, which preferably surrounds nozzle, supplies fan air to mix with exhaust gas in zone, cool it, and increase mass flow. Shroud is corrugated to form peripherally spaced, radially extending lobes to discharge gaseous mixture. Spaces between lobes define flow paths for ambient air to flow between lobes and mix with gaseous mixture at fluted exit margin to further attenuate noise.

3,635,309

STEAM OR GAS DAMPER WITH AXIAL AND RADIAL BAFFLE PLATES

Jan Nemcansky, and Stanislar Merta, both of Brno, Czechoslovakia, assignors to Prvni brnenska strojirna, oborovy podnik, Brno, Czechoslovakia

Filed Sept. 30, 1970, Ser. No. 76,805
Int. Cl. F01n *1/08*
U.S. Cl. 181—55 6 Claims



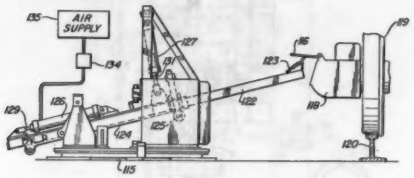
A damper for steam or gas comprising an inlet, a first axial flow section, a second radial flow section and an outlet flow section. The axial flow section is formed of a conduit having a plurality of successively larger diameter perforated plates. The radial section is formed of a plurality of perforated coaxial cylinders. The housing surrounds the first and second sections and provides an annular tortuous passage to atmosphere.

3,635,310

APPARATUS AND METHOD FOR AUTOMATICALLY SERVICING JOURNAL BOXES OF RAILROAD CARS

Kenneth A. Roll, Oberlin, Ohio, assignor to Cleveland Technical Center, Inc., Cleveland, Ohio

Filed Jan. 9, 1970, Ser. No. 1,718
Int. Cl. B61k 3/02; F16n 1/00
U.S. Cl. 184—3 R 18 Claims



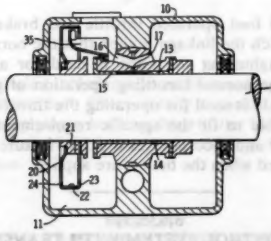
Apparatus and method for automatically servicing the journal boxes of railroad cars moving along a track at unknown speeds. A journal box servicing device, for example, a journal box lid lifter or a journal box oiler is positioned alongside the track. Sensors detect the presence of each journal box at a first point and at a second point on the track as the car travels toward the device. The sensors are used to provide information functional of the speed of the car. This information is utilized with a reference signal which represents the response time of the journal box servicing device to transmit an actuating signal to the servicing device at the proper time in advance of the arrival of the journal box at the servicing device so that the operation of the device is substantially synchronized with the arrival of the journal box at the device. Another reference signal is also supplied to the system that prevents giving of the actuating signal to the servicing device in the event that the travel time of the car and the journal box between the first point and the second point exceeds a predetermined maximum.

3,635,311

OIL SCOOP DUCT FOR ROTATABLE TROUGHED OIL PUMPING DRUM

Howard N. Kaufman, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 25, 1970, Ser. No. 22,565
Int. Cl. F16n 7/16
U.S. Cl. 184—11 A 7 Claims



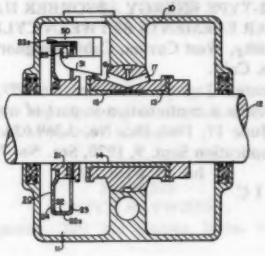
A scoop duct for a rotatable troughed oil pumping drum is comprised of a first curved scoop member extending at one end towards the top of the drum in close proximity and substantially tangent to the upper position of the internal floor surface of the trough of the drum in a direction against the direction of rotation of the drum and curved downwards to extend at its other end towards the axis of the drum. The duct further includes an oil distribution member having a surface curving from the other end of the scoop member to incline in the direction of the rotatable axis of the drum towards a bearing lubrication oil port. The mating surfaces at each end of the scoop duct are substantially tangent to the adjacent curved surfaces so that substantially continuous curved surfaces lead to and from the scoop and the oil is scooped and distributed from the drum with a minimum of agitation and aeration.

3,635,312

OIL SCOOP DUCT FOR ROTATABLE TROUGHED OIL PUMPING DRUM

Howard N. Kaufman, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 16, 1970, Ser. No. 55,318
Int. Cl. F16n 7/20
U.S. Cl. 184—11 R 3 Claims



A scoop duct arrangement for a rotatable troughed oil pumping drum is comprised of a first curved scoop member extending at one end towards the top of the drum in close proximity and substantially tangent to the upper position of the internal floor surface of the trough of the drum in a direction against the direction of rotation of the drum and curved downwards to extend at its other end towards the axis of the drum. The duct further includes an oil distribution member having a surface curving from the other end of the scoop member to incline in the direction of the rotatable axis of the drum towards a bearing lubrication oil port. The mating surfaces at each end of the scoop duct are substantially tangent to the adjacent curved surfaces so that substantially continuous curved surfaces lead to and from the scoop and the oil is scooped and distributed from the drum with a minimum of agitation and aeration. For oil pumping at extremely low speeds, an outer scraper blade is positioned adjacent the upper position of the outer drum floor surface and is angled in the direction of drum rotation towards the distribution member.

3,635,313

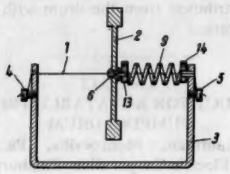
TORSIONAL OSCILLATING DEVICES

Hugo Hettich, Postfach 46, Ludwigshafen/Bodensee, Germany

Filed Mar. 9, 1970, Ser. No. 17,382
Claims priority, application Germany, Mar. 18, 1969, P 19 13 745.2
Int. Cl. F03g 3/00
U.S. Cl. 185—29 5 Claims

The specification describes torsional oscillating devices,

for instance for use in clock escapements, in which an oscillating mass which is mounted on a torsional element is provided with a spring providing an additional restoring force.



3,635,314

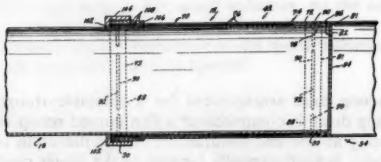
LINEAR-TYPE ENERGY ABSORBER HAVING CIRCULAR ELEMENTS BETWEEN CYLINDERS

Bernard Mazelsky, West Covina, Calif., assignor to Ara, Inc., West Covina, Calif.

Original application Jan. 22, 1968, Ser. No. 699,532, Pat. No. 3,528,529, which is a continuation-in-part of application Ser. No. 558,317, June 17, 1966 Pat. No. 3,369,634. Divided and this application Sept. 9, 1970, Ser. No. 70,687

Int. Cl. F16f *7/12*

U.S. Cl. 188—1 C 12 Claims



An inner member is telescopically engaged in an outer member having cycling and energy absorbing means operatively associated therewith for absorbing energy by deformation and reverse deformation in response to mechanical energy transmitted thereto by at least one of the members. The energy absorbing means are in the form of circular elements having a circular cross section for rolling action between the telescoping members. In one form, the circular elements are turns of a helically wound wire.

3,635,315

SPRING APPLIED EMERGENCY BRAKE

Alan John Shalders, Tolworth, England, assignor to A.C.E. Machinery Limited

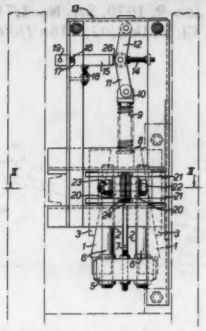
Filed Nov. 26, 1969, Ser. No. 880,125

Claims priority, application Great Britain, Dec. 9, 1968, 58,407/68

Int. Cl. F16d *59/00*; B61h *11/02*

U.S. Cl. 188—189 5 Claims

An emergency brake mechanism for use in the cage of a hoist comprising a pair of brake members spring-biased towards opposed cooperating surfaces on a hoist tower, said brake members being linked through a spring relief means which ensures a gradual application of the brake members.



3,635,316

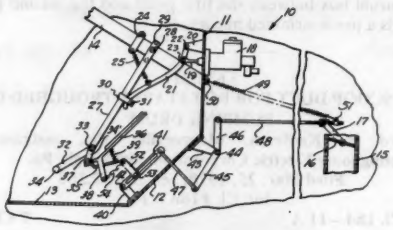
COMBINED FOOT OPERATED THROTTLE AND BRAKE

Henry C. Rogers, and Fanny L. Rogers, both of P.O. Box 98, Rufus, Oreg.

Filed Dec. 19, 1969, Ser. No. 886,671

Int. Cl. F16d *67/00*

U.S. Cl. 192—3 4 Claims



A combined foot operated throttle and brake for motor vehicles in which the linkage is such that the normal braking action of straightening the knee is used for applying the brake while the normal throttling operation of pivoting the foot at the ankle is used for operating the throttle. The linkage is adjustable to fit the specific requirements of an individual driver and incorporates a safety feature in that the throttle is closed when the brakes are applied.

3,635,317

BRAKE CONTROL SYSTEM WITH TRANSMISSION INTERLOCK

Elmer R. Crabb, Morton, and Larry G. Warren, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

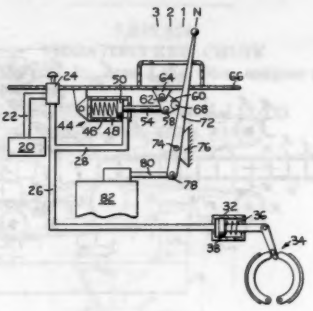
Filed Dec. 17, 1969, Ser. No. 885,700

Int. Cl. F16h *57/10*

U.S. Cl. 192—4 A 4 Claims

A control system for a vehicle having a parking brake and a transmission is provided with two simple spring actuated devices which function to automatically place the transmission in a neutral position and engage the parking brake when

certain predetermined conditions occur in the system. The system is further constructed so that the parking brake acts



as an emergency braking means when fluid pressure in the system drops below a predetermined level.

3,635,318

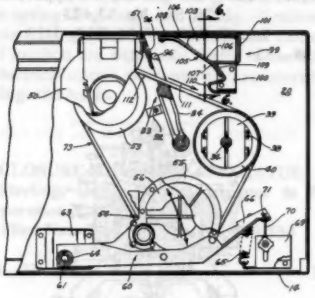
CONTROL DEVICE FOR ROTATING APPARATUS

Tad B. Anthony, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 18, 1969, Ser. No. 886,155

Int. Cl. F16d *67/00*

U.S. Cl. 192—8 R **21 Claims**



A brake device includes a pivotally mounted arm engageable with a drive belt. The pivotally mounted arm is self actuating for applying a braking drag to the belt responsive to the change in the belt from a loose side condition to a tight side condition.

3,635,319

DRIVE RELEASE AND POSITIVE STOP DEVICE

Alexander Bleibtreu, 84 Regensburg, Roter Brachweg 65, and Josef Neumayer, 8401 Kofering, Buchhauser Siedling 156, near Regensburg, both of Germany

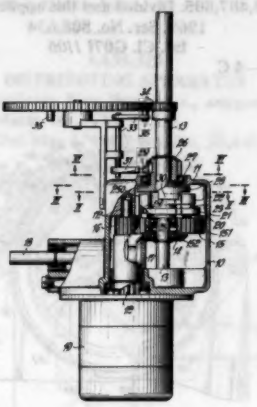
Filed Aug. 18, 1970, Ser. No. 64,756

Claims priority, application Germany, Oct. 3, 1969, P 19 49 906.0

Int. Cl. F16d *65/30, 71/00*

U.S. Cl. 192—28 **22 Claims**

A gear mechanism for operating tap-changing regulating transformers includes means for automatically disconnecting a driven shaft from a driving shaft at predetermined limit



positions of the tap-changing mechanism and to then arrest the driven shaft by positive action.

3,635,320

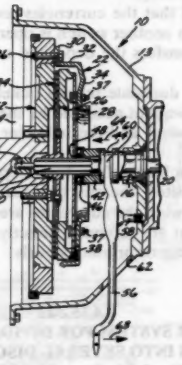
CLUTCH FLYWHEEL

Anthony Capanna, 209 Via Colusa, Palos Verdes Estates, Calif.

Filed Dec. 31, 1969, Ser. No. 889,633

Int. Cl. F16d *13/60*

U.S. Cl. 192—107 M **4 Claims**



A bimetal flywheel for clutches including a steel inner disc and an outer aluminum ring secured together by interlock means, the steel disc including a smooth radial surface for bearing against a disc of a clutch assembly and the outer ring being adapted to carry a cover for the clutch assembly, and the interlock means opposing separation of the inner disc and outer ring as the disc presses against the radial face when the associated clutch is engaged.

3,635,321

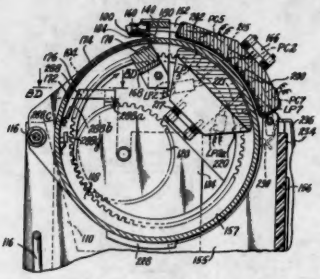
DOCUMENT VERIFICATION AND BANKING MACHINE

James N. Frazier, Sr., Alexandria, Va., assignor to Allied Automation, Inc., Alexandria, Va.

Original application Mar. 1, 1967, Ser. No. 619,642, now Patent No. 3,487,805. Divided and this application Mar. 19, 1969, Ser. No. 808,634

Int. Cl. G07f 1/06

U.S. Cl. 194—4 C 14 Claims



This invention relates to a document verifying machine and, in examples, relates specifically to such a machine adapted for use with a banking depository machine, wherein tokens such as coins of various denominations and documents, such as paper currency of various denominations, may be inserted into the banking machine in any order desired. These are tested for their genuineness.

In the case of currency, the sensings of currencies of various denominations are sensed in one area, and the monetary values of the currencies deposited in the machine are incrementally shown on an indicator and are set up on printing wheels.

If it is desired that the currencies be returned to the operator, a switch is operated, as a result of which the indicator and the printing wheels are automatically restored to zero, and an escrow device in the machine is actuated to refund the deposit of currency.

If it be desired that the currencies are to be accepted by the machine, then another switch is operated. As a result the escrow device transfers the deposited currency to a deposit receptacle.

Following this, duplicate receipt tickets are preferably imprinted with the amount accepted by the machine and are issued to the depositor, and the indicator and printing wheels are zeroized.

Should the machine refuse to accept currency or other documents deposited therein by reason of failure to be genuine, or otherwise, the currencies are not deposited in the escrow device but are refunded directly, and no change occurs in the indicator or printing wheels.

3,635,322

CONVEYOR SYSTEM FOR DIVIDING A LINE OF ARTICLES INTO SEVERAL DISCRETE LANES

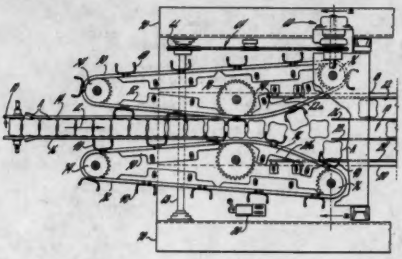
John L. Raudat, North Madison; Lloyd D. Johnson, Portland, and Anthony L. Cuneo, Chester, all of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Feb. 24, 1970, Ser. No. 13,639

Int. Cl. B65g 47/26

U.S. Cl. 198—31 AA 7 Claims

Noncircular articles are fed in a single line on a primary conveyor, and a pair of take away conveyors are provided on either side thereof for receiving articles diverted from the primary conveyor. A pair of pocket chain conveyors have facing runs traveling downstream at a slightly slower speed than that of the primary and take away conveyors. U-shaped pockets are mounted at staggered locations on these pocket chain conveyors, and move inwardly to releasably grip the articles to be diverted, and once an article has been so gripped these pockets move outwardly to divert the article onto an associated take away conveyor. An article-stripping bar acts



on the article so diverted, releasing it from the U-shaped pocket, which pocket then travels upstream for diverting another article. With two take away conveyors, every third article is allowed to pass between the pocket chain conveyors and three discrete lanes of articles are provided.

3,635,323

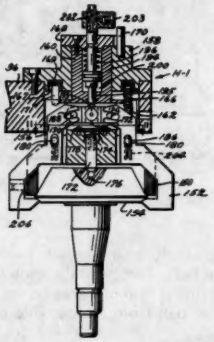
WORK HOLDERS FOR USE WITH APPARATUS FOR TRANSFERRING WORK BLANKS AND WORKPIECES IN BEVEL-GEAR-MAKING MACHINES

Lawrence R. Helfer, Macedon, and Ernst J. Hunkeler, Fairport, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Original application Oct. 1, 1968, Ser. No. 764,219, now Patent No. 3,541,921. Divided and this application Feb. 24, 1970, Ser. No. 13,423

Int. Cl. B65g 47/24; B23g 5/22

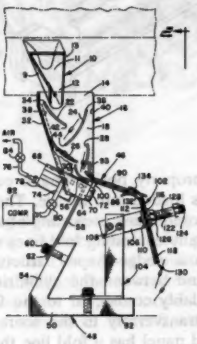
U.S. Cl. 198—33 7 Claims



Work-holding devices for use with work loading and transferring apparatus for automatically handling and moving gear blanks and gear pieces from one station to another relative to gear-cutting machines. The work-holding devices, which are positioned at the ends of loading and transfer arms, each include a cup means for contacting and centering a gear piece relative to the holding device, and jaw members for effecting a tight grip on the workpiece. These different embodiments of the workholder device are disclosed, namely, (H-1) a basic device for handling work blanks which have not been cut at all, (H-2) a device similar to H-1 but including stock-

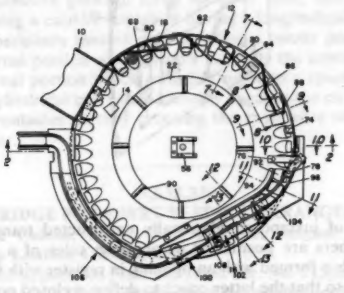
dividing means suitable for orienting a rough cut workpiece for a further cutting operation, and (H-3) a device similar to H-2 but including a different form of stock-dividing means for orienting a workpiece between two finish-cutting operations.

3,635,324
VIBRATORY EXIT CHUTE
Warren C. Burgess, Jr., Avon Lake, Ohio, assignor to Burgess & Associates, Inc.
Filed Mar. 9, 1970, Ser. No. 17,733
Int. Cl. B65g *47/24, 45/00*
U.S. Cl. 198—33 AA **18 Claims**



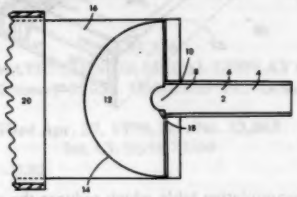
There is provided an improved vibratory parts handling method and apparatus characterized by a return baffle chute carried on a resilient supporting and guiding means, for example a flat spring or springs, and having vibration-inducing means adapted and disposed for vibrating the chute. The apparatus and method are especially useful in the handling of axial lead electrical circuit elements, e.g., resistors having axially extending wire leads.

3,635,325
CLOSURE-HANDLING APPARATUS
Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Filed Nov. 24, 1969, Ser. No. 879,334
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 **10 Claims**



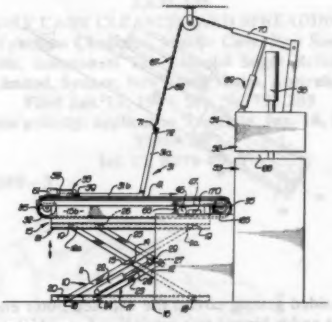
The closure-handling apparatus is arranged to effect orientation of relatively large tapered closures heavier at the smaller closed end by providing moving pockets shaped to conform to the shape of the closures and into which a majority of the closures fall by gravity to assume an oriented position, provision being made for manipulating incorrectly positioned closures carried by the moving pockets into an oriented position in the pockets.

3,635,326
DISTRIBUTING APPARATUS
Vernon L. Langlinais, New Iberia, La., assignor to Morton-Norwich Products, Inc., Chicago, Ill.
Filed May 1, 1970, Ser. No. 33,648
Int. Cl. B65g *47/18*
U.S. Cl. 198—52 **6 Claims**



A distributing apparatus for providing uniform distribution of granular, crystalline or amorphous solids onto a bed or moving belt involving use of a discharge chute to carry said solids and discharging them onto a sloping discharge surface resulting in a uniform distribution of said solids over the entire width of said bed or moving belt.

3,635,327
RAPID LOADING AND UNLOADING EQUIPMENT
Walter H. Thiessen, Long Beach, Calif., assignor to Darnell Corporation, Ltd., Downey, Calif.
Filed Nov. 8, 1968, Ser. No. 774,423
Int. Cl. B65g *21/00*
U.S. Cl. 198—126 **8 Claims**



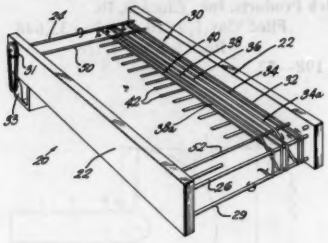
The disclosure concerns equipment for rapidly loading and unloading loads (such as molds with respect to presses), and utilizing a load actuator movable on a load conveyor carried by a scissors linkage enabling precise and rapid movement of the load between positions on and off the conveyor.

3,635,328

ACCUMULATING TABLE FOR EGG PACKER

Harvey Z. Burkholder, Ephreta, Pa., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,193
Int. Cl. B65g 15/00
U.S. Cl. 198—161 9 Claims



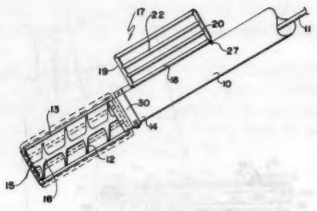
An egg-accumulating table which reduces the surface area of the surface engaging the eggs by utilizing endless wirelike belts of narrow dimension. To further reduce the forward pressure exerted by the supporting wirelike belts, every other belt is returned in the same supporting plane in which it moves forward, so as to present to the eggs as every third belt, one which is moving in the opposite direction. The reversal is accomplished by utilizing a separate roller which every other belt returns to after reaching the delivery end, and a separate roller over which every other belt departs the supporting plane before reaching the initiating end of the table.

3,635,329

SAFETY GATE FOR MATERIAL AUGERS

Fred Walters, Box 26, Kayville, Saskatchewan, Canada

Filed June 15, 1970, Ser. No. 46,023
Int. Cl. B65g 33/00
U.S. Cl. 198—213 4 Claims



A three-sided grating covers the exposed outer end of the auger flight and is hinged to a retaining strap which in turn is secured around the lower end of the auger tube. The grate has a handle which enables the grate to be swung clear of the auger flight for maintenance purposes.

ERRATUM

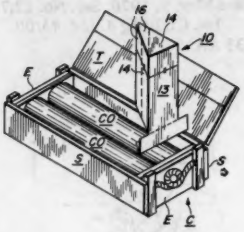
For Class 206—62 see:
Patent No. 3,635,608

3,635,330

SPACER FOR CASED CYLINDRICAL OBJECTS

William C. Merrick, Carol Stream, and Casimir E. Zwierzyna, Addison, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 20, 1970, Ser. No. 29,806
Int. Cl. F42b 39/00
U.S. Cl. 206—3 3 Claims



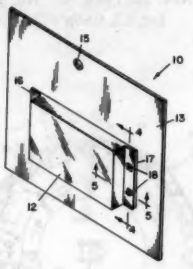
A spacer for properly positioning a pair of side-by-side cylindrical objects loaded into a case. The spacer is formed from a cut and scored blank consisting of a first panel having spaced longitudinally extending fold lines enabling the panel to be folded into a wedge-shaped structure adapted to be wedged against and between the cylindrical objects, and a second panel foldably connected to the first panel along a score extending transversely to the score lines in the first panel. The second panel has a fold line therein whereby the second panel is folded on itself and wedged between the ends of the cylindrical objects and the case. The first panel may include a separable portion also capable of being wedged against and between the cylindrical objects at another point thereon.

3,635,331

DISPLAY PACKAGES

Armand S. Zucker, c/o 20th Century Plastics Co., 4210 N. Sayre Ave., Chicago, Ill.

Filed Sept. 18, 1969, Ser. No. 858,959
Int. Cl. B65d 25/00
U.S. Cl. 206—45.34 5 Claims



A pair of juxtaposed identically constructed transparent box members are positioned at opposite sides of a display card which is formed with an opening in register with the box members, so that the latter coact to define a closed compartment. The box members are provided with pairs of flanges which have the card sandwiched between them, and detents passing through the card locking the flanges together, thus holding the box members and the card in assembled relation. The locked flanges are intended to be broken off the box

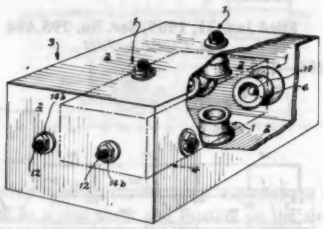
members so that the latter may be separated for gaining access to contents of the compartment. The box members may be used again to hold the contents.

3,635,332

SHOCK-ABSORBING DEVICE

Donald R. Ross, 126 California Ave., Freeport, Long Island, N.Y.

Filed Dec. 8, 1969, Ser. No. 882,894
Int. Cl. B65d *25/12, 81/02, 85/30*
U.S. Cl. 206—46 FR **9 Claims**



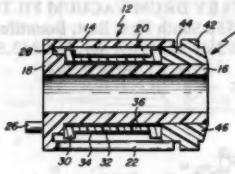
A shock-absorbing device for positioning an article within a container including a suction device for gripping the article, a bumper device and means to mount the suction and bumper devices on a wall of the container. The suction and bumper devices cooperate to both cushion the article and define the extent of movement thereof relative to the container wall.

3,635,333

WIRE SPOOL PACKAGE

Scott R. Bonis, Stow; Thomas E. Salzer, Bedford, and David R. Robillard, Westboro, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 19, 1969, Ser. No. 859,433
Int. Cl. B65d *85/04*
U.S. Cl. 206—52 W **4 Claims**



A protective package for a spool of wire, said package comprising a cuplike container having a longitudinal opening in the periphery thereof and including a center post having an external portion which fixedly supports the container and an internal portion which rotatably supports a spool of wire, and a cylindrical cap which slidingly engages the circular rim of the container thereby retaining the spool wire within said container.

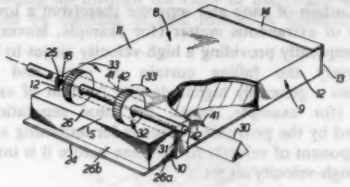
3,635,334

CARTRIDGE FOR SHEET-FEEDING ARRANGEMENTS

Reginald Collins, Potters Bar, England, assignor to Omal Group Limited, London, England

Original application Mar. 18, 1968, Ser. No. 713,806, now Patent No. 3,533,617. Divided and this application Oct. 29, 1969, Ser. No. 872,275
Int. Cl. B65d *83/08*
U.S. Cl. 206—57 **3 Claims**

For feeding sheets from a stack a cartridge presents a platform supporting the stack and is removably pivoted on a fulcrum edge so that the weight of the stack urges the top sheet against a sheet feed means positioned above the stack



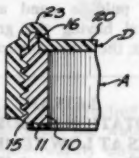
towards one end. The stack is permanently housed in the cartridge, thus facilitating handling of the stack.

3,635,335

NUMISMATIC COIN OR MEDAL DISPLAY CASE

Joseph A. Kramer, 12556 Middlecoff Pl., Granada Hills, Calif.

Filed Apr. 27, 1970, Ser. No. 32,065
Int. Cl. B65d *73/00*
U.S. Cl. 206—0.82 **10 Claims**



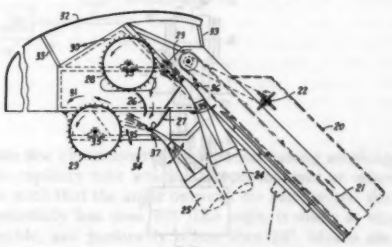
A coin or medal display case embodies an annular frame having on its bottom face a flat ring of pressure sensitive adhesive for sealing attachment to an air-impervious support sheet such as an album page to seal the bottom of the frame; and a transparent cover attachable to the frame to seal it at the top and to provide a viewing window. Resilient fingers, formed integrally with the inner periphery of the frame, spiral inwardly to yieldingly engage a coin periphery to position it beneath the window.

3,635,336

DRY CANE CLEANING AND SPREADING

Martin Wykeham Chapman, Middle Cove, New South Wales, Australia, assignor to The Colonial Sugar Refining Company Limited, Sydney, New South Wales, Australia

Filed Jan. 15, 1969, Ser. No. 791,289
Claims priority, application Australia, Jan. 16, 1968, 32387/68
Int. Cl. B07b *4/04*
U.S. Cl. 209—3 **6 Claims**



Apparatus for spreading harvested sugar cane pieces and for dry separating the extraneous matter from the cane, com-

prising means for spreading the cane to effect frictionally a slight dissociation of the extraneous matter from the cane; means for forming the cane into a falling curtain; means for providing a low-velocity air jet to intercept transversely the falling curtain of cane and separate therefrom a low-density fraction of extraneous matter (for example, leaves); means for subsequently providing a high-velocity air jet to intercept transversely the falling curtain of cane and separate therefrom a generally higher density fraction of extraneous matter (for example, tops); the final separation being enhanced by the provision of means for imparting a horizontal component of velocity to the cane before it is intercepted by the high-velocity air jet.

3,635,337

METHOD FOR TREATING FLOATED SOLIDS

Venacio Mercade, Metuchen, and Samuel R. Weir, Long Branch, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

Filed Aug. 23, 1968, Ser. No. 754,952. The portion of the term of the patent subsequent to July 8, 1986, has been disclaimed.

Int. Cl. B03b *1/00*; B03d *1/06*

U.S. Cl. 209—3 **10 Claims**

To prevent the flotation of a mineral containing an anionic collector reagent, the coated mineral is formed into a thick alkaline pulp containing another mineral having a greater affinity for the collector and an alkaline dispersant at a high concentration. The pulp is aged and then diluted and aerated. The mineral having the greater affinity for the anionic reagent floats; the other mineral is depressed.

3,635,338

REAGENT FLOTATION OF BORAX FROM SALT MIXTURES AT LOW TEMPERATURES

Elie M. Chemtob, Claremont, and William R. White, Alta Loma, both of Calif., assignors to Occidental Petroleum Corporation

Filed Aug. 6, 1969, Ser. No. 848,093

Int. Cl. B03b *1/00*; B03d *1/02*

U.S. Cl. 209—11 **5 Claims**

Sulfonated fatty acids and their salts are shown to be effective reagents for the low-temperature flotation of borax from a mixture of salt crystals, particularly a borax-Glauber's salt-natron salt complex.

3,635,339

APPARATUS FOR SORTING EGGS OR SIMILAR OBJECTS ACCORDING TO THEIR WEIGHT

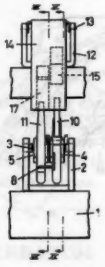
Jelle van der Schoot, and Leonardus Johannes Temming, both of Aalten, Netherlands, assignors to Van Katwijk's Industrieen N.V., Aalten, Netherlands

Filed Jan. 29, 1970, Ser. No. 6,690

Claims priority, application Netherlands, Jan. 31, 1969, 6901573

Int. Cl. B07c *5/16*; A01k *43/00*

U.S. Cl. 209—121 **5 Claims**



An apparatus for sorting eggs or similar objects according to their weight comprises a plurality of juxtaposed balances, of which at least the first is double-acting, said double-acting balance comprising two axial balance levers, one adapted as maximum balance, the other as minimum balance, said double-acting balance also comprising an ejector device which is only operative when the load scale is loaded with a weight which is heavier or lighter than the maximum or the minimum weight to which the balance is adjusted.

3,635,340

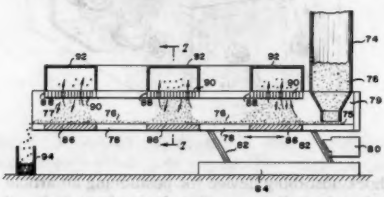
ELECTROSTATIC SEPARATING APPARATUS FOR PARTICLES

John P. Dunn, Elmira, N.Y., assignor to F.I.N.D. Inc., Elmira, N.Y.

Filed Jan. 31, 1969, Ser. No. 795,484

Int. Cl. B03c *7/04*

U.S. Cl. 209—130 **1 Claim**



The transfer of powder particles of the type which are capable of movement in an electric field which is created by applying potential between two spaced electrodes. The particles are charged and propelled from the first electrode towards the second electrode and due to the particle momentum, they can travel through the second electrode if it is apertured and beyond the second electrode if it is not apertured. Once the particle travels past the second electrode it may be utilized for various useful purposes such as electrostatic printing, particle classifying, or transfer to a series of successively arranged electrodes as in a particle pump.

3,635,341

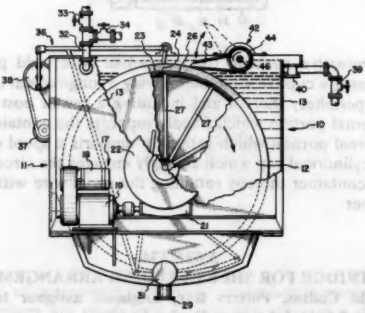
PROCESS OF PRECOATING AND FILTERING USING A ROTARY DRUM VACUUM FILTER

Steven S. Davis, 550 South First East, Bountiful, Utah

Filed July 22, 1969, Ser. No. 843,502

Int. Cl. B01d *37/02*

U.S. Cl. 210—75 **4 Claims**



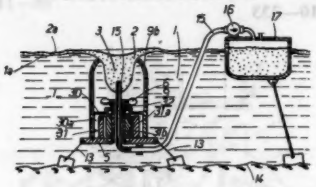
A rotary drum vacuum precoat filter equipped so that the liquid level therein may be controllably varied to completely submerge the drum for precoating, followed by exposure of only a small part of the drum (not more than 30 percent) for cake drying and removal during filtration. There is also disclosed a scraper assembly for cake removal from the exposed drum just prior to resubmergence.

3,635,342

METHOD AND APPARATUS FOR RECOVERING A SUBSTANCE FLOATING AS A SHEET ON THE SURFACE OF A LIQUID MASS

Jean-Claude Mourlon, Saint-Germain-en-Laye, and Ernest Marie Rene Dubois, Sceaux, both of France, assignors to Bertin & Cie, Plaisir, France

Filed Dec. 22, 1969, Ser. No. 887,297
Int. Cl. C02c *1/38*
U.S. Cl. 210—84 15 Claims



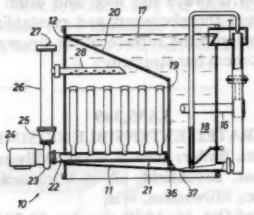
For recovering a substance, more especially a hydrocarbon, spread as a thin sheet and floating on the surface of a liquid, the liquid is, in the vicinity of its surface, subjected to a local rotating movement so as to bring about the formation of a vortex-type cavity which is open and has a vertical axis, and in which the substance originating from the sheet accumulates, and from the said cavity the accumulated substance is extracted, the amount extracted being automatically replaced, as it is extracted, by further substance emanating from the sheet.

3,635,343

FILTRATION SYSTEM

Richard W. Holland, 13103 Conifer, Houston, Tex.

Filed Apr. 28, 1969, Ser. No. 819,845
Int. Cl. B01d *29/24*
U.S. Cl. 210—104 7 Claims



For use in filtering a fluid which is susceptible to light and heavy solids and other materials suspended in the liquid, a filtration system which removes the heavier and lighter suspended particles through settling and skimming whereupon the suction of a downstream pump draws the liquid through the filter apparatus, the filter apparatus functioning after removal of the heavier and lighter contaminants which typically clog filter media, all the apparatus included in an open tank.

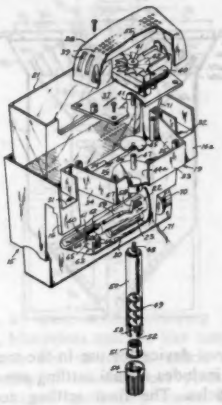
3,635,344

UNITARY FILTER AND PUMP FOR HOME AQUARIUMS

David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.

Filed Aug. 21, 1970, Ser. No. 65,810
Int. Cl. E04h *3/20;* A01k *64/00*
U.S. Cl. 210—169 10 Claims

A combination filter and motorized pump for mounting on the wall of an aquarium. A housing containing a removable filter tank and electric heater is connected by an upper casing to a screw-type of water elevator adapted for positioning within the aquarium, the said housing being positionable outside of the aquarium wall. The top of said casing comprises a platform supporting an electric motor, the said screw elevator extending up through the floor of the casing and being connected by shafting to said motor. A deflector disc is



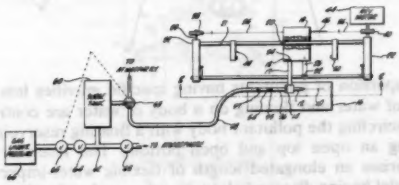
mounted on said shafting for deflecting water downwardly to protect the motor and direct the water to the casing floor from which it flows downwardly through the filtering and heating compartments of the housing, and then upwardly through lateral passageways to correspondingly positioned spillways, the latter being integral with hook members supporting the device on the rim of the aquarium.

3,635,345

CHROMATOGRAPHY

Jerome A. Rodder, 775 Sunshine Drive, Los Altos, Calif.

Continuation of application Ser. No. 503,067, Oct. 2, 1965, now abandoned. This application Mar. 13, 1969, Ser. No. 808,375
Int. Cl. B03d *1/00*
U.S. Cl. 210—198 C 5 Claims



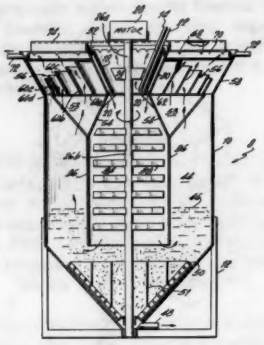
A thin line chromatography dispenser having an elongated, flexible capillary tube which is supported over an adsorbent surface such that the angle between the surface and the tube is substantially less than 90°. The angle is made as small as practicable, and preferably is less than 20°. Means are provided for moving the tube over the adsorbent surface so that liquid can be discharged onto the surface in a thin straight line.

3,635,346

SOLIDS SEPARATOR

Mathew M. Zuckerman, Yonkers, and Alan H. Molof, New York, both of N.Y., assignors to Envirotech Corporation, Palo Alto, Calif.

Filed Feb. 24, 1970, Ser. No. 13,641
Int. Cl. B01d 21/16
U.S. Cl. 210—208 7 Claims



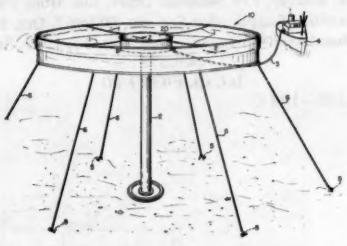
A solids removal device for use in the treatment of water and wastewater includes a final settling zone for removal of lightweight particles. The final settling zone comprises a liquid-carrying conduit defining a path for the upward flow of liquid and encloses settling plates dividing the conduit into flow spaces of upwardly increasing cross-sectional area and providing impingement and conglomeration surfaces for the accumulation and downward flow of solids.

3,635,347

APPARATUS FOR CONTROLLING THE DISPERSION OF POLLUTANTS FLOATING ON A BODY OF WATER

Edward J. Rupnick, 1501 Lincoln Ave, N.E., Renton, Wash.

Filed Aug. 15, 1969, Ser. No. 850,420
Int. Cl. C02b 9/02
U.S. Cl. 210—242 10 Claims



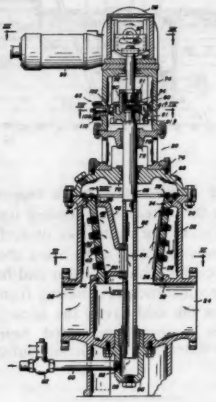
Dispersion of pollutants having specific gravities less than that of water and floating on a body of water are controlled by encircling the pollutant body with a floating reservoir wall having an open top and open bottom. The reservoir wall comprises an elongated length of flexible water-impervious material having disposed along its upper end a plurality of inflatable flotation cells inflatable through a common duct running the length thereof and having disposed along its lower end ballast means for maintaining the lower end of the wall beneath the surface of the pollutant and body of water. The ends of the reservoir wall are joined together in sealing relationship by compressively engaging inflated cells disposed along the ends of the reservoir wall. Pollutants issuing into a body of water can be directed into the interior of the enclosed reservoir formed by the reservoir wall by a flexible or inflexible conduit secured at one end around the source of pollution with the opposite end leading to the interior of the reservoir. The reservoir wall is held in a predetermined location by means of anchors resting on the floor of the body of water and connected by lead lines to the lower end of the reservoir wall.

3,635,348

AUTOMATIC SELF-CLEANING STRAINERS

Hugh B. Carr, McMurray, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.

Filed June 9, 1970, Ser. No. 44,674
Int. Cl. B01d 25/38, 29/24
U.S. Cl. 210—333 20 Claims



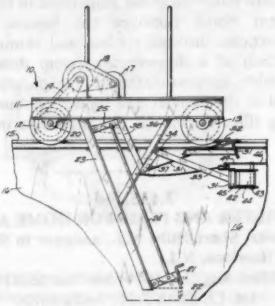
An automatic self-cleaning strainer including a housing having a liquid inlet and outlet, a strainer drum having straining media in the periphery thereof, a backwash shoe arranged to normally engage the surface of the shoe exposed to the liquid inlet, and indexing means for intermittently effecting relative rotation between the shoe and drum in increments of arc about the axis of the drum and also effecting radial separation between the shoe and drum during incremental movement therebetween and reestablishing engagement of the shoe with the surface of the drum when such incremental movement has stopped.

3,635,349

POWER-OPERATED EXTENSIBLE SKIMMING BLADE

Gordon E. Weiss, Butler; John B. Rank, Milwaukee, and Gilbert W. Quast, Brookfield, all of Wis., assignors to Rex Chainbelt, Inc., Milwaukee, Wis.

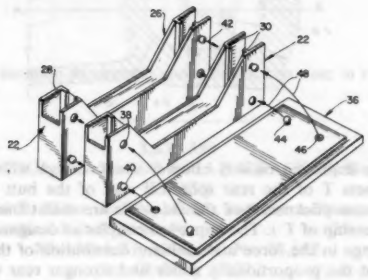
Filed Oct. 16, 1970, Ser. No. 81,273
Int. Cl. B01d 21/04
U.S. Cl. 210—527 4 Claims



A reciprocating bridge with scraper and skimmer blades operates in a tank requiring skimming to the uneven sidewalls of the tank. Each end of the scraper is provided

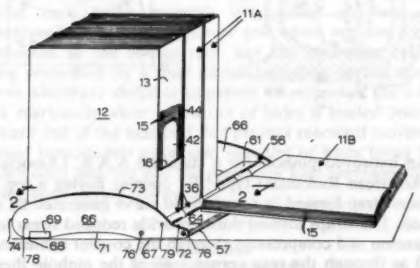
with a pivoted blade which is retracted when the blade is elevated. The blade is extended by a spring when the blade is lowered and the spring holds the blade against the sidewall of the tank at all times but with no unrequired force.

3,635,350
SNAP-IN RACK FOR CASSETTES
Bern E. Wolf, 4070 Laurel Canyon Blvd., Studio City, Calif.
Filed Oct. 14, 1970, Ser. No. 80,561
Int. Cl. A47g *29/00*
U.S. Cl. 211—40 **8 Claims**



A horizontal or vertical stack for cassettes having a plurality of snap-in panels including male and female elements, the snap-in feature permitting forming a complete holder of indeterminate length and in which the individual units can be joined together and used in vertical or horizontal position.

3,635,351
RACK FOR A SET OF BOOKS
Douglas M. Homs, 1538 Industrial Way, Belmont, Calif.
Filed Apr. 9, 1970, Ser. No. 27,091
Int. Cl. A47b *65/00*
U.S. Cl. 211—42 **8 Claims**

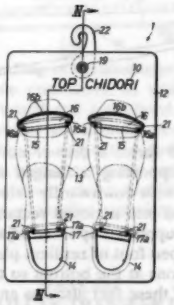


A rack for books has individual holder elements for each volume each having a blade which fits inside the spine binding of the volume. A base receives the elements so that each volume can be pivoted between a storage position with the volume upright and inverted to a use position rotated forwardly approximately 90° and out of contact with the other volumes so that the book may be opened, resting on the supporting surface for the base. In one form of the invention, the base has a rod passing through holes in all the elements preventing accidental dislodgement of the volumes.

3,635,352
SPACE SAVER DRAWING HOLDER
Otis Brooks, Route No. 1, Box 152, McDermott, Ohio, and Bernard S. Moltz, P.O. Box 2147, Boca Raton, Fla.
Filed July 11, 1969, Ser. No. 841,063
Int. Cl. A47f *5/05, 7/16*
U.S. Cl. 211—47 **1 Claim**

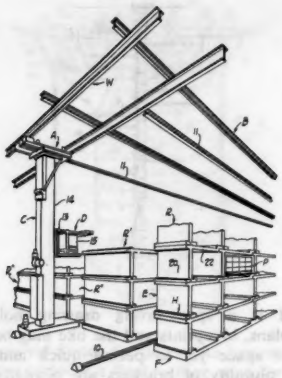
Disclosed is a space-saving drawing holder whereby drawings, plans, blueprints and the like may be stored so as to conserve space yet to permit quick and easy access thereto. A plurality of brackets are pivotally mounted in stacked fashion to an upstanding frame. Drawings are attached to individual drawing holding members, which may be slid over rods on the brackets when it is desired to store the attached drawings. Once the drawings are mounted on the rods, the brackets may be rotated, as a unit, to, as for example, a space-saving position along a wall. When it is desired to remove a drawing, the appropriate bracket may be selectively isolated and the drawings and attached drawing-holding member removed therefrom.

3,635,353
FOOTWEAR HOLDER
Tsuneji Matsubara, Osaka, Japan, assignor to Hatanaka Chemical Industry Co., Ltd., Osaka, Japan
Filed Mar. 19, 1970, Ser. No. 21,075
Claims priority, application Japan, Mar. 24, 1969, 44/26018
Int. Cl. A47f *7/08*
U.S. Cl. 211—34 **1 Claim**



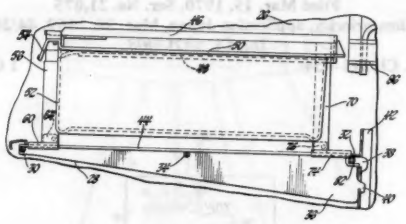
A footwear holder comprises a base sheet having an area for placing a pair of footwear thereon side-by-side, a pair of openings formed in the base sheet for receiving the heels of the footwear and members attached to the base sheet for fastening the footwear against detachment from the base sheet when the heels are fitted in the openings. The footwear thus held onto the base sheets in pairs is ready for transportation or display.

3,635,354
STORAGE RACKS
Stuart A. Martin, Euclid, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed Sept. 12, 1969, Ser. No. 857,439
Int. Cl. A47f 5/00
U.S. Cl. 211—177 8 Claims



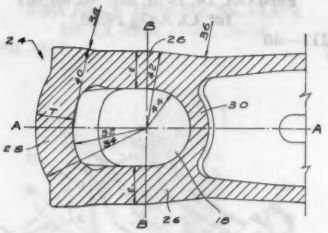
Pigeonhole-type storage racks, shelves, stands and the like constructed of a plurality of interlocking duplicate members, preferably of precast or extruded concrete.

3,635,355
DRAWER SUPPORT FOR WIRE SHELF
Paul E. Kronenberger, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1969, Ser. No. 876,305
Int. Cl. A47f 5/00
U.S. Cl. 211—183 5 Claims



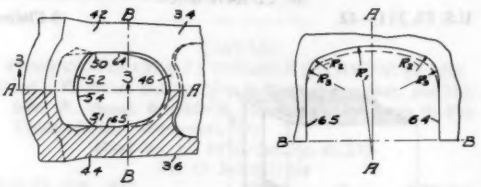
In the preferred form, a drawer cover is provided with guide ways for supporting a flanged drawer. The drawer cover is provided with downwardly extending hollow legs of sheet metal formed into a closed rectangle. The bottoms of the front legs are supported upon an adjacent pair of wires by an inverted U-shaped foot of resilient plastic having inwardly extending projections at the bottom so that it will snap over the wires. Each of these feet also has an upwardly extending projection extending a substantial distance into the bottoms of the legs and provided on each side with chamfered projections which snap into apertures provided at the bottom of the sides of the legs. The rear feet are provided with similar projections snapping into apertures in the bottom of the legs. However, the rear feet while they rest upon two wires, do not snap over the wires but have a U-shaped rearwardly extending projection between the wires having legs which extend above and below the heavy rear cross wire thereby limiting upward, downward, rearward and sideward movement.

3,635,356
RAILWAY COUPLER BUTT
Paul F. Shramovich, Chicago, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Dec. 16, 1970, Ser. No. 98,658
Int. Cl. B61g 9/00
U.S. Cl. 213—64 2 Claims



An improved railway coupler shank design wherein the thickness T of the rear spherical wall of the butt and the minimum thickness t of the sidewalls are maintained in the relationship of $T\ t$. The improved coupler so designed causes a change in the force and moment distribution of the shank so that the proportionally stiffer and stronger rear walls resists a greater portion of the induced moment thereby providing a stress reduction in both the rear wall and the sidewalls. The relationship of $T\ t$ also serves to reinforce the rear spherical wall of the butt thereby increasing its wearing characteristics.

3,635,357
MODIFIED PINHOLE FOR RAILWAY COUPLERS
Russell George Altherr, Chicago, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Aug. 10, 1970, Ser. No. 62,540
Int. Cl. B61g 9/00
U.S. Cl. 213—64 3 Claims

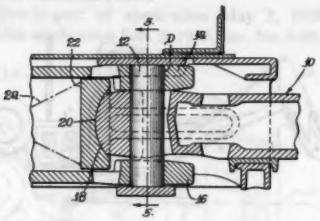


An improved pinhole for a standard A.A.R. (Association of American Railroads) type "F" coupler having a top and bottom strap formed in a compound curve generated by multiradii. The straps formed thusly provide reduced stress levels in tension and compression through the coupler centerline as well as through the rear corner radii at the pinhole thereby minimizing coupler failures at these points.

3,635,358
COUPLER ARRANGEMENT
Russell George Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Sept. 2, 1970, Ser. No. 68,978
Int. Cl. B61g 9/00
U.S. Cl. 213—69 7 Claims

According to the disclosure, a railway vehicle coupler comprises a shank embraced by top and bottom straps of a conventional yoke for a conventional draft gear. A conven-

tional pin extends through aligned pinholes in the shank and straps. The shank is specially contoured in the area of its pin-

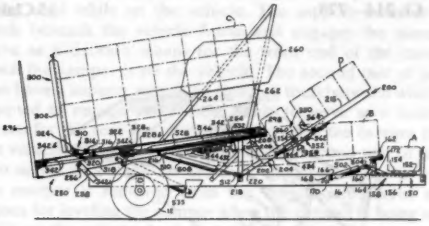


hole to increase its strength and resistance to wear in railway service.

3,635,359
CONTROL MEANS FOR ROLLING RACK OF BALE WAGON

Raymond E. Fisher, Reedley, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 31, 1970, Ser. No. 24,153
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **5 Claims**



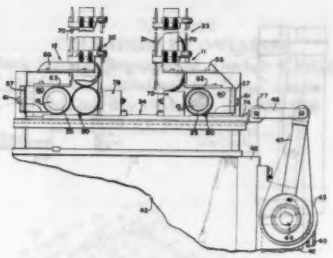
An agricultural bale wagon having a rolling rack which is movable rearwardly incident to tiers of bales being loaded onto the forward end of the load bed of the wagon, the rolling rack being movable in loading and unloading directions by a hydraulic cylinder unit which actuates a cable connected to the rolling rack and the hydraulic cylinder being controlled by a fluid circuit including certain control valves which are shiftable to permit movement of the rolling rack rearwardly when a new tier of bales is loaded onto the forward end of the load bed, but prevent rearward movement thereof immediately upon said new tier of bales being fully loaded onto said bed and the preceding load correspondingly having been shifted rearwardly.

3,635,360
FEED MECHANISM

Richard E. Prendergast, Western Springs, and Lawrence M. Rogers, Chicago, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Original application Oct. 22, 1965, Ser. No. 500,816, now Patent No. 3,491,575. Divided and this application June 6, 1969, Ser. No. 831,035
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 F **7 Claims**

This disclosure relates to a feed mechanism for a wall ironing machine of the type which includes two reciprocating rams driven in out of phase relation by a crankshaft. The disclosure particularly relates to a feed mechanism for feeding blanks into the wall ironing apparatus in timed relation to the movement of the rams. Two hoppers are provided for supplying blanks, one hopper for each of the rams. On the other



hand, a single feed mechanism is provided for alternately receiving blanks from the two hoppers and feeding the blanks to the respective rams.

3,635,361
HANDLING PERISHABLE PRODUCTS

William H. Hayes, Overland, Kans., assignor to Alton Box Board Company, Alton, Ill.

Filed July 31, 1969, Ser. No. 846,385
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **3 Claims**

Packaging and handling of perishable products in stacks of articulated disposable containers, in which the disposable containers are intervened and articulated by a rebated ring having a major perimeter and a minor perimeter with an intermediate ledge, and the respective perimeters being proportioned so that the minor perimeter embraces the outside of an articulated container, above, and the major perimeter embraces the outside of another articulated container below, the ring.

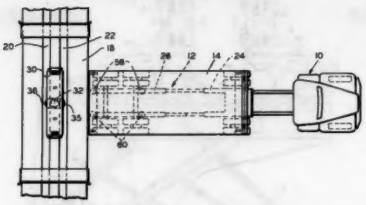
3,635,362
TRUCK TO RAILCAR TRANSFER DEVICE AND METHOD

Robert A. Pratt, Harbert, Mich., assignor to Clark Equipment Company

Filed July 30, 1969, Ser. No. 846,066
Int. Cl. B61d *3/16*
U.S. Cl. 214—38 A **5 Claims**

Transfer of a load container from a truck to a railcar using a loading bolster to support and to swing the container into longitudinal alignment on the railcar during projection of the

container onto the loading bolster by relative sliding movement between the container and the supporting surfaces of



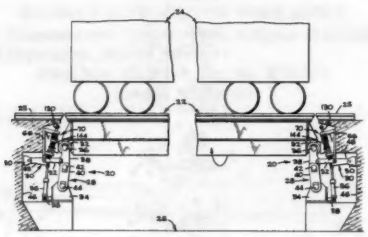
the truck, with transfer assisted by forward and reverse movements of the truck in directions transversely of the railcar.

3,635,363

CAR DUMPER END SUPPORT

Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 29, 1969, Ser. No. 888,635
Int. Cl. B65g 67/50
U.S. Cl. 214—52 C 7 Claims



A combined vertical support and end lock mechanism is located at each end of a tiltable track section of a rotary car dumper. Engagement of the mechanism simultaneously actuates both the horizontal and vertical end supports. The vertical support maintains the end of the tiltable track section at the same elevation as the rail bed when a loaded car is placed in the dumper. The end lock mechanism also prevents longitudinal shifting of the tiltable track section when cars are moved onto or through the dumper. In addition, the end lock is self adjusting to accommodate longitudinal shifting of the track section prior to engagement of the lock mechanism.

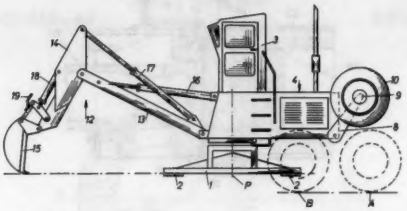
3,635,364

MOBILE WORKING MACHINE

Gunnar Tingleff, Dyshoj 11, Lind, 7400 Herning, Denmark

Filed July 10, 1969, Ser. No. 848,382
Int. Cl. E02f 3/74
U.S. Cl. 214—138 5 Claims

Only a single pair of ground wheels are mounted on a platform of a movable working machine, and this single pair of ground wheels carried by individual respective stub axles located on the ends of the arms movably journaled in locations outside mounting of the source of energy for the machine on the platform, provide structure movable by means for lowering the pair of ground wheels alternately



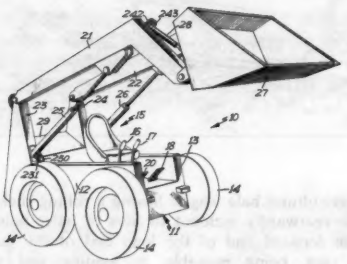
clockwise and counterclockwise even passing the source of energy of the machine into rearward and forward differing ground positions respectively, and raising the wheels off the ground to an intermediate position.

3,635,365

TRACTOR VEHICLE WITH HYDROSTATIC DRIVE MEANS

James J. Bauer, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 20, 1969, Ser. No. 800,839
Int. Cl. B66f 9/00
U.S. Cl. 214—778 15 Claims



A front-end loader having a hydrostatic drive means. The front-end loader is characterized by a pair of stanchions at the rear of the body and loader arms pivotally mounted to the stanchions projecting forwardly and downwardly on opposite sides of the operator's seat terminating at a material handling member at the lower front of the body. Means is provided for lifting the loader arms and tilting the material handling member. Two hydrostatic transmission units each consisting of a variable displacement pump and a fixed (or variable) displacement hydraulic motor serve to drivingly connect the engine with the respective wheels on each side of the body. The power system is of modular design and includes the following modular components: engine, transfer case, two hydrostatic transmissions (each including a variable displacement pump and a fixed (or variable) displacement hydraulic motor both of the swash plate type), and a gear reduction unit for each of the transmissions. The disclosure also includes an adjustable linkage for independently tilting the swash plate to vary the displacement of each hydraulic pump. The adjustability relates to varying the rate at which the pump displacement is changed per increment of movement of a control lever which actuates the linkage.

3,635,366

JACK AND TIEDOWN SYSTEM FOR A VEHICLE MOUNTED CAMPER

John N. Dodgen, Humboldt, Iowa, assignor to Dodgen Industries, Inc., Humboldt, Iowa

Continuation-in-part of application May 2, 1969, Ser. No. 821,183. This application Feb. 5, 1970, Ser. No. 9,003

Int. Cl. B60p *3/32*

U.S. Cl. 214—515 4 Claims

A jack and tiedown system for a vehicle mounted camper including a first pair of jacks secured to the lower front corners of the camper and a second pair of jacks secured to the rearward end of the camper. The front jacks each include a vertically movable leg portion extending downwardly therefrom. A U-shaped support member is secured to the lower ends of the two leg portions and extend therebetween. The support member serves as a stand for the front end of the camper when the camper is removed from the vehicle and also provides a means for leveling the camper when it is being used while on the vehicle. The support member extends beneath the vehicle frame and engages the same to serve as a tiedown means for the front end of the camper when the camper is on the vehicle. The second pair of jacks also have a support member extending therebetween which is adapted to engage the vehicle frame to serve as a tiedown means for the rear end of the camper when the camper is on the vehicle. The support member on the second pair of jacks also serves as a stand for the back end of the camper when the camper is removed from the vehicle and serves as a means for leveling the camper when the camper is being used while on the vehicle. In the modified form of the system, the second pair of jacks are pivotally connected to the auxiliary axle and wheel assembly which supports the rearward end of the camper. In the modified form of the embodiment, a support member does not extend between the jacks of the second pair of jacks.

3,635,367

CONTAINERS WITH HANGERS AND METHOD OF PREPARING THE SAME

Kazuyuki Morita, Gifu-ken, and Satoshi Nakajima, Bisai-shi, both of Japan, assignors to Eisai Kabushiki Kaisha, Tokyo-To, Japan

Filed Dec. 29, 1969, Ser. No. 888,763

Claims priority, application Japan, Dec. 28, 1968, 43/95925

Int. Cl. B65d *25/22*

U.S. Cl. 215—100 A 4 Claims

A method of manufacturing container provided with a flexible hanging member including an annular flat rim and a hanger with its roots connected to the rim. The rim is firmly secured to the bottom of the container by means of a hollow jacket heat shrunk around tne main body of the container and on the rim.

3,635,368

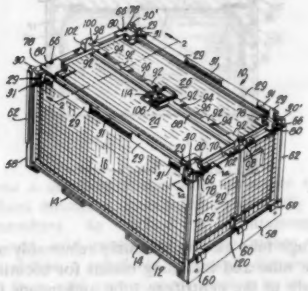
COLLAPSIBLE CONTAINER

Robert Beck Winsor, Beaconsfield, Quebec, Canada, assignor to IEC-Holden Ltd., Montreal, Quebec, Canada

Filed Dec. 22, 1969, Ser. No. 886,978

Int. Cl. B65d *7/26*

U.S. Cl. 220—6 16 Claims



A collapsible container having a bottom platform with end walls and at least one side frame pivotably connected thereto, a sidewall pivotably connected to the top edge of the side frame, and a top wall pivotably connected to the top of the container, the various walls of the container being pivotable about an end edge thereof so that said walls may be moved from a collapsed position to an erected position or vice versa, and locking means to ensure that all of the walls are locked in position when the container is closed in erected position.

3,635,369

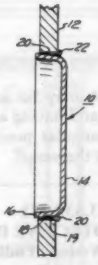
PRECOATED PLUG

Tull C. Lasswell, 230 Pawnee Path, Lake Orion, Mich., and John L. Monier, 1968 Harwood Drive, Oxford, Mich.

Filed Aug. 19, 1969, Ser. No. 851,261

Int. Cl. B65d *41/00*

U.S. Cl. 220—42 B 7 Claims

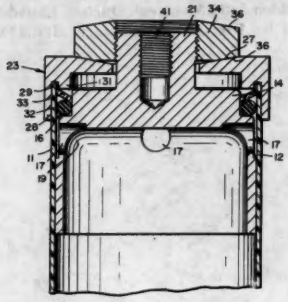


A plug adapted to close off core openings in an internal combustion engine is precoated with a plastic which forms a fluidtight seal between the peripheral surface of the plug and the core opening upon insertion of the plug therein. The plug is preferably coated with a solution of a polyvinylidene chloride in cyclohexanone which is cured by heating for 20 minutes at 160° F. The thickness of the plastic coating may be doubled by heating the coated plug for 10 minutes at 350° F.

3,635,370
CENTRIFUGE TUBE CLOSURE ASSEMBLY

William A. Romanauskas, Southbury, Conn., assignor to Ivan Sorvall, Inc., Newton, Conn.

Filed Aug. 11, 1970, Ser. No. 62,921
Int. Cl. B65d 53/00
U.S. Cl. 220—46 R 15 Claims

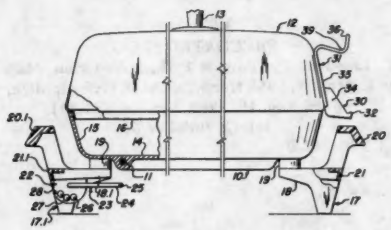


A centrifuge tube closure assembly removably attached to a centrifuge tube and including means for securing said assembly firmly to the centrifuge tube and means for venting air above the contents of the tube when said closure assembly is secured to the tube.

3,635,371
SELECTIVELY SUPPORTABLE COOKING APPARATUS

Berton R. Oxel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Mar. 12, 1970, Ser. No. 18,881
Int. Cl. B65d 7/42
U.S. Cl. 220—69 17 Claims



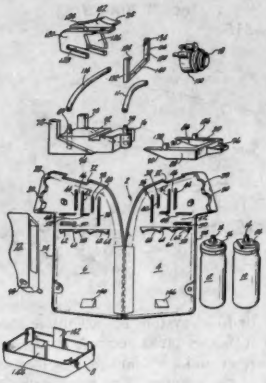
A cooking vessel which may be selectively supported in various angular positions and having a lid which may also be selectively supported in angular positions either associated with or disassociated from the vessel.

3,635,372
SELF-PROTECTIVE DEVICE

Kenneth A. Van Dyck, Weston; Phillip W. King, Cheshire, and Charles F. Stephenson, Rowayton, all of Conn., assignors to Olin Corporation

Filed Sept. 29, 1969, Ser. No. 861,733
Int. Cl. B67b 7/24
U.S. Cl. 222—3 3 Claims

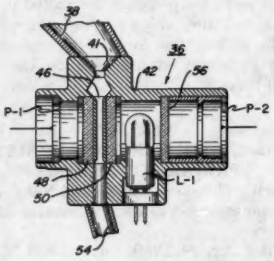
A nonlethal self-protective device utilizing pressurized cans of an incapacitating fluid and a gaseous fluid. The device includes a nozzle for dispensing the incapacitating fluid and a whistle which is activated by the gaseous fluid. The contents of the cans are released by the actuation of a trigger which in turn actuates a camming member which moves a valve actuator to depress the valve stems of the cans.



3,635,373
AUTOMATIC DEVELOPABILITY CONTROL APPARATUS

James E. Kuhl, and Francis D. Witinski, both of Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,727
Int. Cl. B67d 5/08
U.S. Cl. 222—57 7 Claims



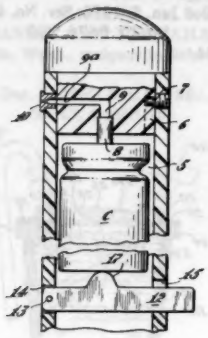
A developability control system for a xerographic reproducing machine. The system includes two parallel-spaced NESA glass plates through which two-component developer material, including toner and carrier, flows. The plates are connected in a circuit wherein each is electrically charged alternately for equal periods of time for attracting and repelling toner. A light source is located at one side of the two plates while a photocell is located on the other side to sense the optical density of the sum toner deposit on the two plates at all operating times. This sensing is compared with light received by a second photocell, separated from the same light source by a filter, to cause the dispensing of toner to the developer at appropriate times.

3,635,374

FLUID-DISPENSING CLUB

John E. Anketell, Fitzwilliam, N.H.

Filed Dec. 15, 1969, Ser. No. 885,246
Int. Cl. F41b *15/02*
U.S. Cl. 222—78 4 Claims



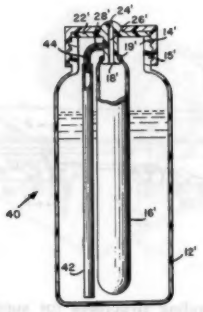
A dispensing device comprising an elongate rigid holder having a handle portion and a normally closed interior chamber designed to hold an aerosol container having a normally closed delivery valve, the wall of the chamber having a discharge port; a manually controllable, external trigger device for opening the valve of the container; a concealed safety valve which normally closes said discharge port, and means accessible, at the exterior of the device, for setting said safety valve to inoperative position.

3,635,375

RESILIENT SQUEEZABLE SPRAY DISPENSER

Hubert J. Gaetke, 6630 Dartmoor Way, San Jose, Calif.

Filed Nov. 6, 1969, Ser. No. 874,479
Int. Cl. B65d *35/28*
U.S. Cl. 222—94 8 Claims



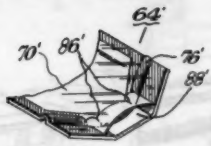
A spray container including an outer receptacle of yieldable or resilient material, the outer vessel being adapted to hold a supply of a first fluid and having a top opening to the exterior of the receptacle; an inner vessel of yieldable or resilient material adapted to hold a supply of a second fluid; a top sealing member engaged to the outer receptacle about the top opening, a nozzle within the top member and opening to the exterior of the container, the nozzle joined to passage means extending to the interior of the outer receptacle to receive said first fluid and to the inner vessel to receive said second fluid.

3,635,376

QUICK-OPEN FLEXIBLE PACKAGE

Harold Richard Hellstrom, 5245 Center Ave., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 852,553, Aug. 25, 1969, now abandoned. This application June 5, 1970, Ser. No. 43,717
Int. Cl. B65d *35/08*
U.S. Cl. 222—107 27 Claims



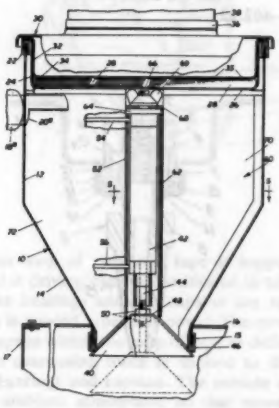
I disclose a quick-open container structure comprising a pair of sheet members, means for peripherally sealing said sheet members to define a containment section therebetween, said peripheral sealing means being interrupted to define a relatively narrowed dispensing channel, extending from said containment section to an edge of said structure, at least one of said sheet members being sufficiently flexible to permit deformation at said containment section to extrude the contents thereof through said dispensing channel, a deformable member mounted on one of said members and disposed to block said dispensing channel in the undeformed condition of said deformable member, means for stretching said one flexible member over said deformable member in its nondeformed condition to seal said containment section, said deformable member being shaped to loosen said one flexible member in the deformed condition of said deformable member.

3,635,377

MATERIAL-TRANSPORTING DEVICE

Raoul J. Potvin, Franklin, Pa., assignor to Conair, Incorporated, Franklin, Pa.

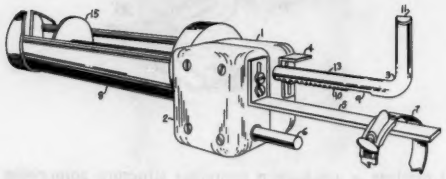
Filed Aug. 19, 1969, Ser. No. 851,224
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 10 Claims



A device for transporting pulverant, finely divided or granular material from a source of such material to an in-

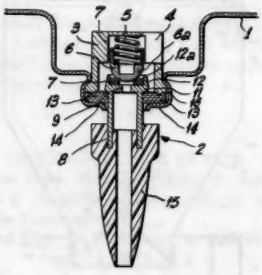
terim material-receiving loader or chamber having improved valve means for controlling the discharge of one or more materials from the chamber and which valve means can additionally distribute the discharged materials within a subsequent receiving chamber.

3,635,378
APPLICATING DEVICES
Damon DeHart, 6 Veterans Ln., Stoneham, Mass.
Filed Nov. 24, 1969, Ser. No. 879,333
Int. Cl. F16n *3/12*
U.S. Cl. 222—333 **12 Claims**



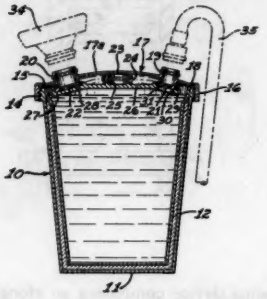
A device including an encasement, a dividing plate inside the encasement, a securing bar mounted on the encasement, a drive source secured by the securing bar to the encasement, a gear train supported inside the encasement, a modified rack gear driven linearly through the encasement by the gear train, a storage chamber mounted on the encasement through which the modified rack gear also travels linearly, a disk mounted on the end of the modified rack gear which forces the contents of the storage chamber to expel as the modified rack gear advances through the storage chamber, an automatic stop on the modified rack gear which prevents its advancement after a predetermined distance of travel, a keeper to cause the modified rack gear to resist disengaging from the gear train, but still allow the disengagement and withdrawal of the modified rack gear from any point of its advancement.

3,635,379
SPRING-BIASED TILTING VALVE
Henry Angele, Riscle, Gers, France, assignor to Etablissements Valois, Marly le Roi, Yvelines, France
Filed June 4, 1969, Ser. No. 830,262
Claims priority, application France, June 10, 1968, 154317
Int. Cl. B65d *83/06*
U.S. Cl. 222—402.22 **4 Claims**



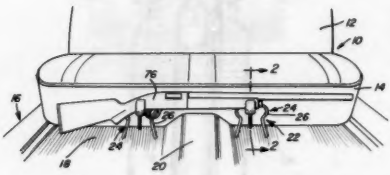
A dispensing valve having a valve member with rounded cap and means enabling rocking of the tube for progressive opening of the valve by displacing the valve seat relative to the rounded cap.

3,635,380
CONTAINER CLOSURE
Leonard C. Fitzgerald, Fairfax, Calif., assignor to Nospil Limited, Los Angeles, Calif.
Filed Jan. 5, 1970, Ser. No. 631
Int. Cl. B67d *3/00*
U.S. Cl. 222—484 **6 Claims**



A traveler's nonspillable, reuseable drinking cup for use of drivers and passengers in automobiles, boats, trains and airplanes, to dispense liquid only when held in the hand and pressed slightly on any part of the top to actuate normally closed sealing valves in the closure for the cup.

3,635,381
FRONT FLOOR MOUNTED AND SEAT ATTACHED VEHICLE GUN RACK
John V. Hensley, Shreveport, La., assignor to Jack H. Kaplan, Shreveport, La., a part interest
Filed Aug. 22, 1969, Ser. No. 852,290
Int. Cl. A47b *81/00*
U.S. Cl. 224—1 **5 Claims**



A pair of upstanding structures for supporting longitudinally spaced portions of an elongated horizontal member extending transversely in front of the forward edge of a vehicle seat cushion. Each of the cradle structures includes front and rear sides and a pair of upstanding opposite side legs spaced horizontally apart at their lower ends and joined together at their upper ends and is provided with an upper upwardly opening U-shaped cradle element disposed in an upstanding plane generally normal to an upstanding plane containing the lower end portions of the legs of the cradle structure with the cradle element projecting forwardly from the front side of the structure. Also, elongated resilient ten-

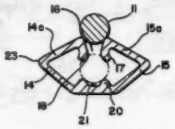
sion members have one pair of corresponding ends thereof supported from upper portions of the cradle structures and anchor portions on the other pair of ends thereof for anchoring to the forward lower edge of the associated seat cushion when the cradle structures are disposed upright in front of the seat cushion.

3,635,382

HANDLE GRIP FOR BAILS

Earl Wilson, Seattle, Wash., assignor to Sales & Services, Inc., Seattle, Wash.

Filed Dec. 1, 1969, Ser. No. 881,108
Int. Cl. A45f *5/10*
U.S. Cl. 224—45 P **5 Claims**



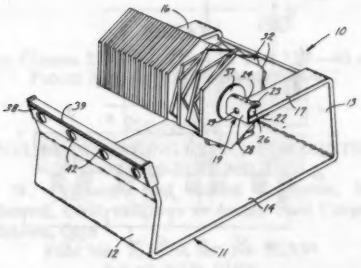
A handle grip for bails on buckets and the like in which the grip snaps into position from the inner concave side of the bail and has transverse slits so that the grip can more readily bend into chordal segments in accordance with the arch of the bail.

3,635,383

TAPE DISPENSER FOR MULTIPLE ROLLS

Edward Waltz, Grand Rapids, Mich., assignor to The E. O. Bulman Manufacturing Company, Inc., Grand Rapids, Mich.

Filed Oct. 22, 1969, Ser. No. 868,393
Int. Cl. B26f *3/02*
U.S. Cl. 225—37 **8 Claims**



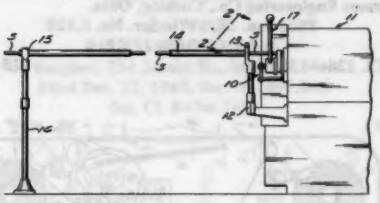
Shaft means is mounted upon a base and supports a plurality of adjacent plate members for rotation around the axis of said shaft. Said plate members define substantially identical and regular polygons circumscribed by identical circles coaxial with said shaft axis. Plural rolls of tape having coaxial openings with diameters substantially identical to the diameters of said circumscribed circles can be sleeved over said plate members for separate, independent rotation. A cutting edge is mounted upon the base for severing portions of the tape from the rolls thereof.

3,635,384

STOCK FEEDING DEVICE FOR AUTOMATIC SCREW MACHINES

John F. Wedler, 30749 Summit Ln., Pepper Pike, Ohio

Filed Feb. 4, 1970, Ser. No. 8,557
Int. Cl. B65h *17/34*
U.S. Cl. 226—49 **11 Claims**



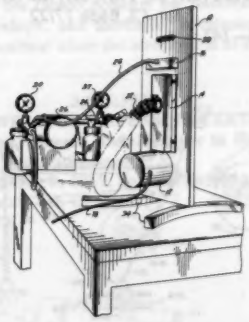
A device for inserting bar stock into the spindle of an automatic lathe, such as an automatic screw machine. The device is mounted on the feed end of the machine and is provided with work-engaging jaws that are coaxial with the spindle of the machine. The jaws are manually operable to engage and clamp a bar and also are movable in directions parallel to the axis of the spindle so that a bar clamped in the jaws can be advanced into the spindle and into engagement with the feeding mechanism of the machine or withdrawn from the feeding mechanism of the machine.

3,635,385

HIGH-SPEED MAGNETIC TAPE

William David Cohen, Huntington, N.Y., assignor to Systems Resources Corporation, Plainview, N.Y.

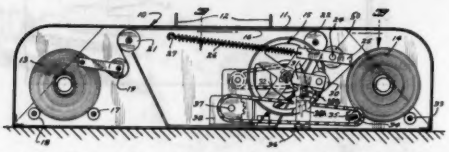
Filed Jan. 15, 1970, Ser. No. 3,071
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **9 Claims**



An endless loop of magnetic tape is supported on two bearings and a driving capstan positioned in triangular relationship. The bearings and the capstan are mounted on a panel which is spaced a parallel cover. The cover and panel confine the space within the loop of tape to define a chamber to which an evacuating force is applied to draw the tape toward the bearings and capstan. The outside of the tape is exposed to ambient atmosphere so that movement of the tape past a magnetic head to which the tape is exposed creates a laminar airflow avoiding direct contact between the head and tape. Inside of the loop the bearings are fixed but

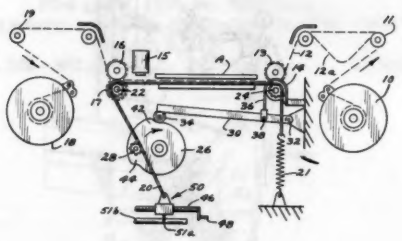
are, however, provided with a flow of air providing for a cushion between the bearings and the tape. The output of the head can be monitored and used to control the aforenoted evacuating force to control the passage of the tape across the head.

3,635,386
STRIP FEED MECHANISM
Karl J. Kallenberg, Minneapolis, Minn., assignor to Electronic Systems Engineering Co., Cushing, Okla.
Filed Jan. 26, 1970, Ser. No. 5,528
Int. Cl. B65h *17/22*
U.S. Cl. 226—135 **15 Claims**



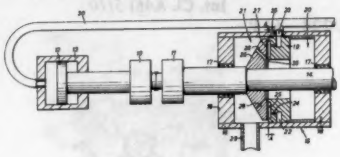
A strip feed mechanism for precisely feeding preselected lengths of a strip material, such as a paper used in photographic printing, in response to a predetermined signal. The drive includes positive stop mechanism for precise feeding of selected lengths, and adjustable means to permit feeding different lengths as desired. The length of feed is measured precisely, and the unit includes stop means that releases to stop the feeding mechanism at an exact position. The stop signal is dependent upon the length actually fed and is not affected by inertia or time lag in the starting of drive motors.

3,635,387
INCREMENTAL WEB FEEDING MEANS
Albert F. Gallistel, Wayzata, and Warren R. Posthumus, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.
Filed Nov. 28, 1969, Ser. No. 880,866
Int. Cl. B65h *17/22*
U.S. Cl. 226—141 **14 Claims**



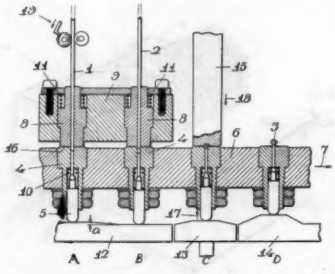
Readily adjustable web-feeding means which, in the specific form disclosed, embodies a chain and sprocket drive with a takeup crank arm engaging an intermediate portion of the chain to produce an intermittent driving action which is readily adjustable from a location remote from the crank arm by varying the relationship between the engaged chain segment and the crank arm axis such as by moving by means of a remote-controlled mechanism one end of the engaged chain segment such as the anchored end of the chain whereby the effective takeup stroke on the chain can be varied.

3,635,388
FRICTION WELDING APPARATUS
Brian E. Jenkinson, Barkston, near Grantham; Geoffrey W. Watson, Grantham, and Peter B. Foister, Melton Mowbray, all of England, assignors to Steelweld Limited, Grantham, England
Filed Jan. 30, 1969, Ser. No. 795,306
Claims priority, application Great Britain, Feb. 5, 1968, 5,666/68
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **5 Claims**



In a friction welding machine one workpiece chuck is urged by a ram or rams towards a second workpiece chuck which is rotatable. The second chuck is supported in bearings with freedom for limited axial displacement under axial thrusts transmitted to it from the ram or rams through the workpieces and is supported against the thrusts by a hydrostatic thrust bearing.

3,635,389
HEADING MACHINE
Akira Shibata, Tokyo, Japan, assignor to Chugai Denki Kogyo Kabushiki Kaisha, Tokyo, Japan
Original application Sept. 13, 1965, Ser. No. 486,621, now Patent No. 3,460,735. Divided and this application Nov. 27, 1968, Ser. No. 779,546
Int. Cl. B23k *21/00*; B23p *3/02*
U.S. Cl. 228—3 **3 Claims**



A heading machine for joining and shaping, by cold welding under pressure, cut lengths of wire of respectively different metal compositions is disclosed as including means for feeding continuous wires of the different metal compositions, means for severing that short lengths of the different wires, means for positioning and retaining the short lengths in axial alignment with each other, pressure means for forcing the cut ends of the short lengths of wire into abutment to cold weld the short lengths to each other, and shaping means operable to deform and "head" one end of the joined short wire pieces, these means being mounted on a mounting means

which is arranged to be stepped along a path of travel past plural working stationed in uniformly spaced relation.

3,635,390

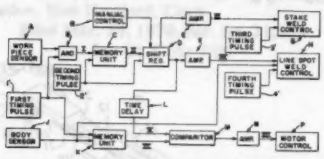
ELECTRONIC CONTROL CIRCUIT FOR AUTOMATICALLY FED MACHINES

Clarence R. Gross, Hastings, Mich., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Original application Jan. 17, 1968, Ser. No. 698,657, now Patent No. 3,534,897, dated Oct. 20, 1970. Divided and this application Sept. 25, 1969, Ser. No. 870,830

Int. Cl. B23k *1/00, 5/00*

U.S. Cl. 228—8 **8 Claims**



There is provided an apparatus controlling an automatically fed machine having multiple feed stations and a conveyance path along which workpieces are fed. A pulse generator operatively connected to the apparatus generates a plurality of timing pulses in timed relationship with feeding of the workpieces, and a multiple of workpiece detection sensors produce signals when detecting workpieces in several of the stations, such signals being stored in associated memory units in time relationship with several of the timing pulses. An output signal from one of the memory units impulses a shift register, which is then stepped for each machine cycle by one of the timing pulses. An output signal from the shift register is adapted to energize a work-performing apparatus should the workpieces be conveyed properly, and another output signal from the shift register is compared in a comparator with an output signal from the other of the memory units. Should the two comparator signals agree in point of time, an output signal from the comparator will energize a machine control that keeps the machine operating. Should the two signals not compare in point of time, both the work performing apparatus and the machine control remain deenergized, and the machine stops.

ERRATA

For Classes 229—14, 229—37 and 229—40 see: Patent Nos. 3,635,450 thru 3,635,452

3,635,391

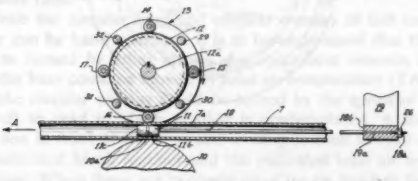
INTERNAL BEAD FORGING DEVICE FOR CONTINUOUS WELDED TUBE MILL

Donald W. Follstaedt, and Robert S. Burns, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed May 7, 1970, Ser. No. 35,330

Int. Cl. B23k *19/00*

U.S. Cl. 228—24 **15 Claims**



A forging assembly for the continuous flattening of the longitudinal, internal weld bead of small diameter tubing produced by a continuous tube mill. The forging assembly comprises a support roll for the tubing, a mandrel mounted within the tubing, and forging means adapted to impart periodic, overlapping blows so as to flatten the internal bead against the mandrel. The forging means comprises a plurality of planetary forging rolls carried by a roll cage rotatively mounted on a driven race. There is a time delay between each contact of the tube by a forging roll, sufficient to enable the mandrel to engage a new portion of the bead for forging.

3,635,392

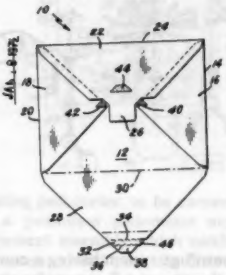
REUSABLE ENVELOPE

Harvey W. Burgher, 204 Jacobs St., Seekonk, Mass.

Filed Dec. 22, 1969, Ser. No. 887,046

Int. Cl. B43m *7/00*

U.S. Cl. 229—85 **1 Claim**



A reusable envelope for carrying sheet material therein and being defined by a one-piece blank having a central portion to which side and end flaps are integrally joined and that are folded relative thereto; the end flaps being adhered in place when the envelope is initially sealed, and a tear tab being formed on one of the end flaps and being stripped therefrom to disconnect the end flap to which it is joined from the other end flap, wherein the other end flap may be withdrawn from the closed position for removal of the contents of the envelope, and thereafter is reinsertable into a positive closed position when the envelope is to be reused.

3,635,393

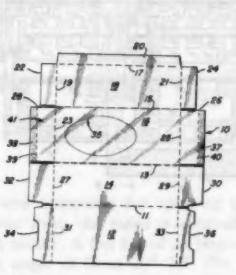
OVERWRAPPED DISPENSING CARTON

Harold J. Herglotz, Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,073

Int. Cl. B65d *5/72*

U.S. Cl. 229—17 S **2 Claims**



A dispensing carton is formed from a one-piece blank of paperboard or the like which includes a flexible sheet of

overwrap material overlying the outer surface of the dispensing wall of the carton. The flexible overwrap is attached to the end flaps of the carton so that it can be readily removed without damaging the outer surface of the carton walls.

3,635,394

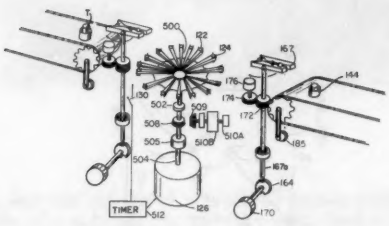
AUTOMATED CLINICAL LABORATORY

Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corporation, Santa Ana, Calif.

Continuation-in-part of application Ser. No. 845,992, July 30, 1969. This application Nov. 7, 1969, Ser. No. 874,824

Int. Cl. B04b *9/12, 9/14*

U.S. Cl. 233—26 **2 Claims**



An automated centrifuge system having a conveyor for test tubes to be loaded thereon at a first transfer station, the test tubes are removed from the conveyor and placed into trunnion cups on a trunnion carrier. Program means are coupled to the trunnion carrier to first slowly rotate the trunnion carrier as the test tubes are loaded thereon, second, rapidly rotate the trunnion carrier to centrifuge specimens therein and third, slowly rotate the test tubes so that the test tube can be unloaded. The test tubes are then removed from the trunnion carrier and, second conveyor carries the test tubes away from the trunnion carrier.

3,635,395

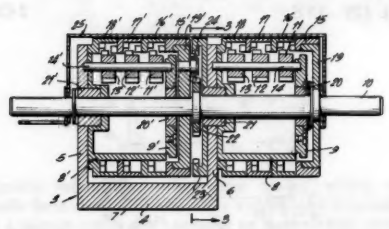
PLANETARY CONVERSION COUNTER

David F. Walsh, Lake Ronkonkoma, N.Y., assignor to Melland Gear and Instrument Co., Inc.

Filed Jan. 16, 1970, Ser. No. 3,347

Int. Cl. G06c *27/00*

U.S. Cl. 235—1 A **10 Claims**



A first and a second counter are provided. Each counter has at least one rotatable readout wheel. Drive means are provided for rotating the readout wheels. Internal planetary gearing is provided between the counters. The drive means causes the readout wheel of one counter to rotate at a predetermined race relative to and different from that of the readout wheel of the other counter. An externally driven revolvable mask may be disposed over the face of the numbers on the rotatable readout wheels of the counters. The mask when revolved in one direction exposes only the numbers of one counter and when revolved in counter direction exposes only the numbers on the other counter.

3,635,396

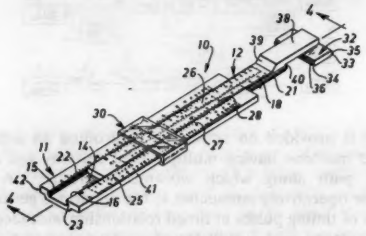
SLIDING PARALLEL RULE

Leslie Palfi, 167 Bayview Heights Drive, Toronto 17, Ontario, Canada

Filed Dec. 10, 1970, Ser. No. 96,763

Int. Cl. G04b *27/02*; B431 *7/06*

U.S. Cl. 235—70 R **9 Claims**



A parallel rule includes an elongated body and an elongated arm with a crosshead which is slidingly inserted into a longitudinally extending channel in the body for longitudinal movement of the arm relative to the body at a desired angle thereto. To allow the rule to be carried in a person's pocket, the crosshead can be slid from the channel and the arm then slid bodily into the channel. With the arm so disposed in the channel, the rule can also be used as a slide rule.

3,635,397

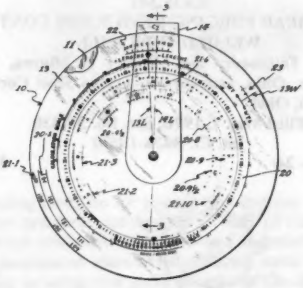
SPEED REGISTER

Jerome J. Kurland, 2725 W. Fitch Ave., Chicago, Ill.

Original application July 13, 1967, Ser. No. 653,061, now Patent No. 3,473,731. Divided and this application Sept. 15, 1969, Ser. No. 857,998

Int. Cl. G06c *27/00*

U.S. Cl. 235—78 **6 Claims**



A speed register intended for thoroughbred racing (flat) is disclosed in a circular slide embodiment and in a straight slide embodiment. The circular slide has a base provided

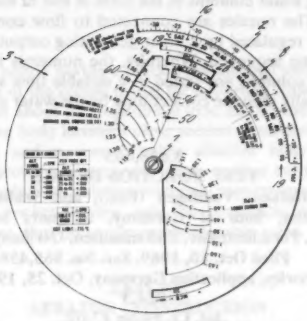
with an annular elapsed time scale and a set of corresponding speed readout scales spaced therealong according to individual race distances. The circular slide embodiment includes a set of rotary discs and cursors secured by a pair of eyelets to accommodate relative shifting movement. The straight slide embodiment includes a plurality of base scales each associated with common cursor elements, with the base scales being relatively shiftable to portray relative performance factors simultaneously with direct speed readouts. A pivoted base scale also enables conversion of past performance data between tracks having different speed characteristics.

3,635,398

ENGINE RATING PRESSURE RATION COMPUTER

Anselmo Toni, Wapping, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 20, 1970, Ser. No. 21,555
Int. Cl. G06c *3/00*
U.S. Cl. 235—88 **10 Claims**



A computer for determining turbine engine pressure ratio limits during engine operation for several inflight ratings. The computer comprises a circular base with a circular overlay mounted thereon for relative movement. Indicia indicative of static air temperature (SAT), total air temperature (TAT) and altitude are placed at different radii in arcuate form on the circular base with arcuate windows being provided on the overlay to read said indicia to insure the overlay is positioned at a desired position with respect to the circular base. While the windows over the altitude indicia only have an arrowhead selector, the window for SAT and TAT has a scale representing Mach number. Also on the base are two sets, or families, of curves representing Mach numbers. Each set of these curves has been calculated to meet with a mating curve formed on one side of each of two other windows on the overlay which is marked in numbers representing engine pressure ratio.

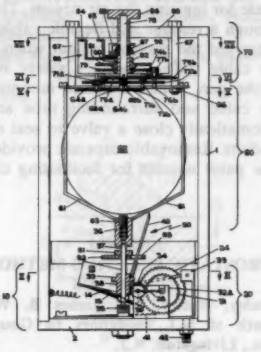
While the circular base and circular overlay of this computer can be hand operated, it is to be understood that they can be turned by other means. An instrument wherein the circular base could be moved by total air temperature (TAT) and the circular overlay could be turned by the speed of an aircraft to read in Mach number is contemplated. A fixed hair line in front of the base and overlay is used to read off the indicated Mach number and the indicated total air temperature. When these are properly lined up on the hair line, the static air temperature (SAT) can be read directly therefrom.

3,635,399

PEDOMETER WITH DIRECTION READOUT

Ernst A. Dahlquist, 7744 Thornapple Drive, Ada, Mich., and Eric A. Sandberg, 5744 20th Ave. S., Minneapolis, Minn.

Filed Sept. 23, 1969, Ser. No. 860,194
Int. Cl. G04b *43/00*
U.S. Cl. 235—105 **15 Claims**



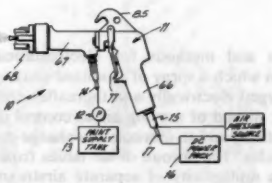
An integrating pedometer, to be carried by a person walking, having a pendulum pedometer movement, a spring-loaded escapement assembly which suddenly reciprocates a needle at distance-related periodic intervals, a compass assembly which positions said needle as a function of the direction of travel, a sphere which is turned by said sudden reciprocation of said needle, a north-south register wheel and an east-west register wheel contacting said sphere to register the rotation thereof, and a readout assembly including a dial to indicate the distance and direction back to the point of origin.

3,635,400

PAINT SPRAYING METHOD AND APPARATUS

Eric T. Nord, Oberlin; Samuel R. Rosen, Lorain; Don R. Scarbrough, Elyria; Burton J. Vilagi, Amherst, all of Ohio, and Peter W. Runstadler, Jr., Hanover, N.H., assignors to Nordson Corporation, Amherst, Ohio

Filed Mar. 27, 1970, Ser. No. 23,227
Int. Cl. B05b *5/00*; F23d *11/28*
U.S. Cl. 239—15 **20 Claims**



A method and apparatus for spraying paint and similar coatings. In one form the paint is sprayed at low pressure from a flat fan nozzle. A flat fan of air impinges upon the fan of paint at an angle of from 30°–70°. The air atomizes the paint to form a soft spray with low-forward velocity. In another form of the method, two fans of paint are projected toward one another at an angle and an air fan is directed along the bisector toward the zone of intersection. The air

fan atomizes both streams of paint. An electrode can be placed in the air stream to ionize the air stream which in turn charges the paint particles. The width of the paint spray pattern is varied by varying the included angle of the air fan.

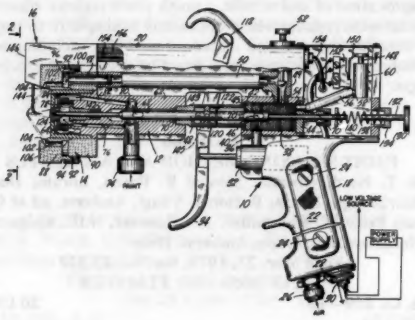
A spray gun is disclosed having two tubular paint nozzles for projecting two fan-shaped fans of paint. An air nozzle is mounted between the paint nozzles for projecting a fan of air against the paint fans to atomize the paint. The air nozzle is adjustable to provide air fans of different angles for varying the width of the paint spray pattern. An electrode is disposed in the air nozzle for ionizing the air stream. This electrode is energized through a resistor and flexible cable. The cable is spring-urged toward the resistor so that when the resistor is removed, the cable shifts causing a safety switch to open deenergizing the gun. When a nozzle mounting member is removed, the cable and surrounding tube are shifted forwardly to automatically close a valve to seal off the air and electrical conduits. Removable caps are provided on the ends of the tubular paint nozzles for facilitating cleaning of the nozzles.

3,635,401

ELECTROSTATIC SPRAYING METHODS AND APPARATUS

Leo L. Bromley, Nutley, and James B. Williams, West Orange, both of N.J., assignors to Gourdine Coating Systems, Inc., Livingston, N.J.

Filed Oct. 27, 1969, Ser. No. 869,628
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **17 Claims**



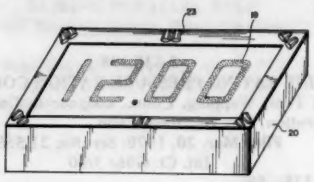
Apparatus and methods for electrostatically coating a workpiece in which a spray of atomized coating material particles is charged electrically and thereafter confined within a surrounding shroud of moving air to control dispersal of the charged particles and to increase the charge potential carried by the particles. The shroud of air issues from the spray apparatus as a multiplicity of separate airstreams that extend toward the workpiece to be coated a distance sufficient to confine the charge particles against electrostatic attraction to objects other than the workpiece. Electrostatic charges are imparted to the coating material particles by a rearwardly directed corona discharge established between a corona electrode positioned in the spray path and the spray head. An air-operated switch energizes the corona electrode upon the flow of air to the spray head, thus preventing sparking between the corona electrode and the spray head by ensuring that the corona electrode is immersed in an airflow prior to being energized.

3,635,402

WATER FOUNTAIN CLOCK

Koreichi Kawamura; Yoshiko Kawamura, and Koichi Kawamura, all of No. 66, Jyomyoji, Kamakura, Japan

Filed Mar. 31, 1970, Ser. No. 24,270
Claims priority, application Japan, May 24, 1969, 44/39905
Int. Cl. B05b *17/08*
U.S. Cl. 239—18 **6 Claims**



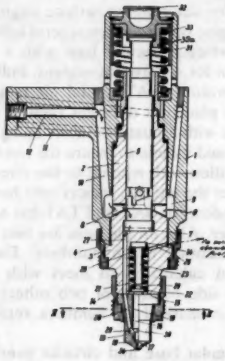
A water fountain clock, including nozzles, each selectively producing water columns in the form of one of numerals zero to nine. The nozzles are connected to flow control means, which are regulated by a timer generating output signals in a certain time sequence. Whereby, the numerals indicated by the water columns are varied in a suitable time sequence, so as to digitally indicate correct time by the water columns.

3,635,403

FUEL INJECTION DEVICE

Wilfried Hofken, Vaihingen (Enz.), and Walter Eckstein, Ostelsheim, both of Germany, assignors to L'Orange GmbH., Porschestrasse, Zuffenhausen, Germany

Filed Oct. 10, 1969, Ser. No. 865,456
Claims priority, application Germany, Oct. 25, 1968, P 18 05 024.3
Int. Cl. F02m *47/02*
U.S. Cl. 239—90 **10 Claims**

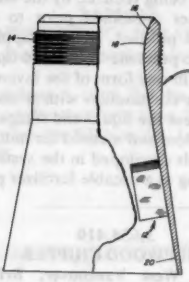


A fuel injection device, especially for diesel engines, in which the fuel injection plunger is reciprocable in a guiding body one end portion of which forms a spring chamber for the spring which controls the valve member in the nozzle body which latter is connected to that end portion of the guiding body which forms said spring chamber.

3,635,404
SPIN STABILIZING ROCKET NOZZLE

Wayne J. Hopkins, College Park, and James K. Watson, Potomac, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 18, 1970, Ser. No. 47,478
Int. Cl. B64d 33/04
U.S. Cl. 239—265.15 7 Claims



A rocket nozzle having a plurality of internal vanes located downstream of the nozzle throat for imparting rotational spin to the rocket about its longitudinal axis. Each vane may have a nonablative body having a cross section symmetric with the nozzle axis and a consummable ablative body attached thereto to provide a composite cross section asymmetric to the nozzle axis. The ablative material, imparts spin stabilization to the rocket leaving only the symmetric nonablative vane portions, thus preventing excessive spin rates.

3,635,405
AERATOR CONSTRUCTION

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, and Harold Shames, 5 Agnes Cir., Ardsley, both of N.Y.

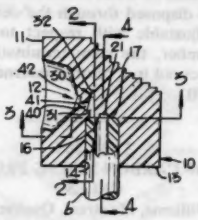
Filed Nov. 5, 1970, Ser. No. 87,075
Int. Cl. E03c 1/084
U.S. Cl. 239—428.5 10 Claims

An inexpensive faucet aerator is provided by three molded parts and a thin metal cup that holds two of the molded parts in assembled relationship. The first molded part is an elongated annulus provided with upstream and downstream recesses separated by an inner ring that helps to break up the liquid flow and serves as an abutment to support a second molded, jet-forming, part in the upstream recess and is arranged to be engaged by the third, molded, part located in the downstream recess and aiding in defining air intake means to the aerator.

3,635,406
ONE-PIECE SPRAY HEAD AND CORE PIN CONSTRUCTION THEREFOR

Christian T. Scheindel, Glen Gardner, N.J., assignor to Clayton Corporation, St. Louis, Mo.

Filed May 27, 1970, Ser. No. 40,800
Int. Cl. B05b 1/34
U.S. Cl. 239—490 6 Claims

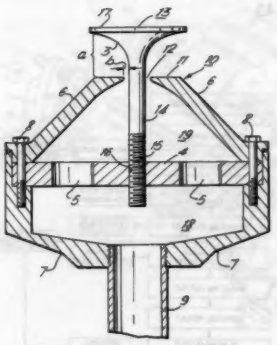


A spray head for aerosols has a flow channel recessed upwardly into the end surface of its bore; when seated on the tip of a hollow stem, the recessed flow channel controls the rate of flow by providing a cross-sectional area smaller than that of the spray orifice. From the flow channel, the flow leads upward into the aft side of a large circulation chamber; from its forward circular face a converging spray orifice, located below center, induces vortex circulation to produce a fine spray.

3,635,407
SPRINKLER HEAD

Hollis Banks Wheelock, R.R. #3, Middleton, Nova Scotia, Canada

Continuation-in-part of application Ser. No. 767,154, Oct. 14, 1968, now abandoned. This application Sept. 25, 1970, Ser. No. 75,473
Int. Cl. B05b 1/26
U.S. Cl. 239—514 2 Claims



A sprinkler head is provided which includes four interassembled elements. The first three elements are: (A) a dished

lower casing having means for connection to a source of liquid under pressure; (B) an aperture plate adapted to be secured to the lower casing; and (C) an upper frustoconical casing adapted to be secured to the plate and to the lower casing, the upper casing including a central discharge aperture at the apex thereof. These three elements are assembled to provide firstly a pressure equalization chamber provided with inlet means for liquid to be dispersed and outlet means, the cross-sectional area of the pressure equalization chamber being greater than the cross-sectional area of the inlet means by a factor of about 20 times or more; and secondly, a discharge chamber fed from the outlet means of the pressure equalization chamber, the discharge chamber being frustoconical and including a central outlet means at the apex thereof. The fourth element is (D) a diversification element including a stem of lesser diameter than the diameter of the central outlet disposed through the central outlet means and vertically adjustable with respect to the apex of the frustoconical member, the stem terminating in a threaded end threadedly secured to a central, internally threaded aperture in the plate (B).

3,635,408

TREATMENT OF CARBON LINING FROM REDUCTION CELLS

Merlyn Morris Williams, Montreal, Quebec, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Aug. 25, 1970, Ser. No. 66,854
Int. Cl. B02c *19/00*
U.S. Cl. 241—1 **18 Claims**

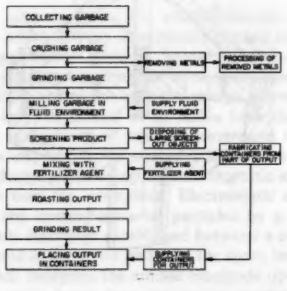
Carbon lining removed after long, chemical-accumulating use in an aluminum reduction cell is crushed and treated with dry steam at a temperature insufficient to destroy the carbon, so that unwanted carbides and nitrides are eliminated and the lining material is conditioned for recovery of useful values, advantageously by classification thereafter into a coarse fraction providing carbon in reusable form and a fine fraction in which chemical material is reclaimed, such as alumina and fluorides suitable for use in the fused bath of a reduction cell.

3,635,409

INTEGRATED MUNICIPAL WASTE PROCESSING SYSTEM AND METHOD

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Continuation-in-part of application Ser. No. 707,910, Feb. 5, 1968, now abandoned. This application Aug. 3, 1970, Ser. No. 60,353
Int. Cl. B02c *15/00*
U.S. Cl. 241—43 **9 Claims**



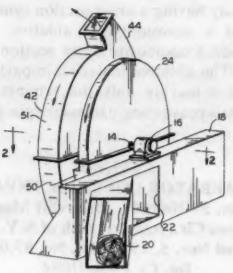
The present invention provides a system and method for processing municipal waste into useable products. In a preferred form of the invention the same may be utilized as a composting plant having a rapid time cycle, requiring for batch or continuous feed through operation, a small fraction of the processing time required by conventional biochemical composting plants. Central in the invention is the concept of utilizing a ball-mill to pulverize incoming materials. Specifically usable as a unique combination for municipal waste processing is a wet-grind ball-mill stage followed by a dry-grind ball-mill stage, nonfloatables being reduced by the former and floatables being reduced by the latter. Preferably, both outputs are later combined prior to compacting to produce a usable end product. Heat is supplied in the dry-grind ball-mill stage to preclude layer build up on the interior walls of the ball-mill. In one form of the invention the system or method is used in conjunction with a municipal sewage treatment plant wherein the liquid and sludge phases thereof are utilized in the system and method for milling and also for enriching the materials developed in the system and method, for ultimate processing as a useable fertilizer product.

3,635,410

PULPWOOD CHIPPER

William C. Smith, West Vancouver, British Columbia, Canada, assignor to Rader Pneumatics & Engineering Co. Ltd., Burnaby, British Columbia, Canada

Filed May 4, 1970, Ser. No. 34,250
Int. Cl. B27l *11/02*
U.S. Cl. 241—56 **5 Claims**



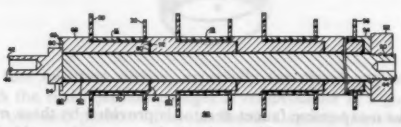
Wood chipper has rotating chipper disc and fan wheel spaced from disc. Housings surround disc and fan wheel with passageway from disc to fan wheel housing for chips. Blades on fan wheel engage chips to impel them out of top discharge opening. Total arrangement provides low angles of impact to minimize chip damage.

3,635,411

WINDING MANDREL

Emerick J. Petrinjak, Masury, Ohio, and William J. Grasinger, Stoneboro, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,509
Int. Cl. B65h *54/00*, *55/00*
U.S. Cl. 242—1 **1 Claim**



A winding mandrel assembly for holding a plurality of coil bobbins while electrical coils are wound thereon, including a

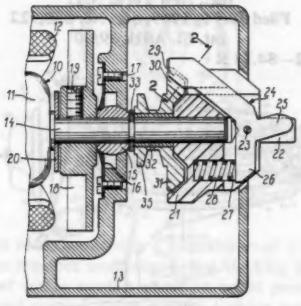
plurality of individual bobbin holders or mandrels telescoped over a common shaft member. Each bobbin mandrel axially locates one end of its associated coil bobbin, and one end of a coil bobbin on an adjacent bobbin mandrel. One end of each bobbin mandrel extends into a depression in the end of the next adjacent bobbin mandrel, to locate and properly support the ends of the coil bobbins while compensating for dimensional tolerances in the length of the coil bobbins.

3,635,412

BOBBIN WINDING DEVICE FOR SEWING MACHINE

Silvano Perlino, Pavia, Italy, assignor to Necchi, S.p.A., Pavia, Italy

Filed Sept. 3, 1969, Ser. No. 854,903
Claims priority, application Italy, Sept. 23, 1968, 32419 A/68
Int. Cl. B65h *54/00, 54/40*
U.S. Cl. 242—20 **4 Claims**



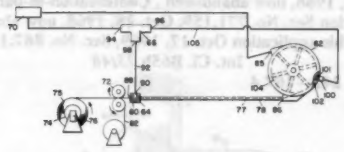
A bobbin-winding arrangement for sewing machines including a means for uncoupling the motor drive shaft from the machine's normally driven elements.

3,635,413

BREAK DETECTION AND CORRECTION SYSTEM FOR THREADLIKE MATERIALS

Davis S. Gish, Bel Air, Cumberland, Md., assignor to Hercules, Incorporated, Wilmington, Del.

Filed Dec. 29, 1969, Ser. No. 888,434
Int. Cl. B65h *63/02, 25/08*
U.S. Cl. 242—54 **11 Claims**



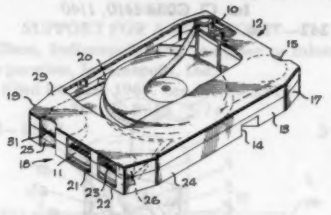
A device for detecting the breakage of a filament as a filament passes to a working surface is provided. The detection device has a conduit through which a filament and a gas passes. This conduit is connected through a pressure port to a device for measuring pressure change. If a filament being pulled from a supply source through the conduit of the device is broken, the filament will be pulled out of the conduit. When the broken filament is pulled out of the conduit a change in pressure occurs in the pressure port. The change in pressure is sensed by the device for measuring pressure change and a filament breakage alarm is activated. A break detector and correction system is also provided in which a broken filament is replaced. In this system the change in pressure at the pressure port activates a filament-replacing system.

3,635,414

CARTRIDGE CONTAINING TWO ENDLESS LOOPS OF MAGNETIC TAPE

Shashikant M. Patel, Garden Grove, Calif., assignor to Certron Corporation, Anaheim, Calif.

Filed Nov. 24, 1969, Ser. No. 879,020
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **9 Claims**



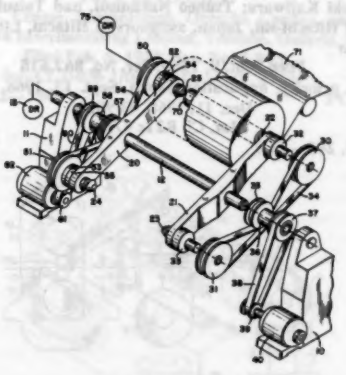
A magnetic tape cartridge for use with standard sound recording and reproducing apparatus is provided with two endless loops of tape coiled on a separate hub and platform assembly, each guided past apertures in a different end wall. Selection of a given tape for use is made by inserting into the using apparatus the end of the cartridge where the given tape is exposed through apertures.

3,635,415

WINDING APPARATUS

Richard W. Phelps, Fulton, and Ronald O. Meihofer, Baldwinsville, both of N.Y., assignors to The Black Clawson Company, Hamilton, Ohio

Filed Sept. 8, 1969, Ser. No. 855,851
Int. Cl. B65h *19/22, 75/30*
U.S. Cl. 242—64 **16 Claims**



A winder for webs of sheet material utilizes a pair of drive motors of different, although slightly overlapping, speed ranges for driving the cores upon which the webs are wound. The motor having the higher speed range is connected to one end of the core by an air clutch and the motor having the

lower speed range is connected to the opposite end of the core by an overrunning clutch. The first motor, therefore, drives a core at a steadily decreasing speed and increasing torque as the overall diameter of the roll being built on the core increases. When this speed decreases to the upper speed limit of the second motor, the overrunning clutch engages and allows the drive to be transferred to the second motor. This permits the building of significantly larger rolls than would be feasible with a single drive motor.

3,635,416

FILM-WINDING MECHANISM IN A PHOTOGRAPHIC CAMERA

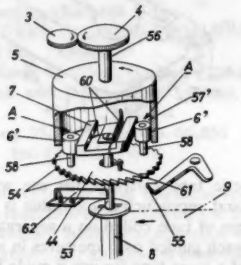
Shigeru Kurihara; Tamotsu Yamazaki; Hideaki Yamamoto, and Junichi Yokozato, all of Tokyo, Japan, assignors to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,663

Claims priority, application Japan, Dec. 25, 1968, 43/112970

Int. Cl. G03b *1/10, 1/40*

U.S. Cl. 242—71.4 **9 Claims**



Film-transporting mechanism in a photographic camera provided with such constructions that film-transporting operation may be made smooth and positive, while the various complex operations such as multiple exposure or changeover from the longer to the shorter films and vice versa may be carried out in an easy manner.

3,635,417

METHOD OF AND APPARATUS FOR DETECTING THE POSITION OF THE END OF A COIL OF STEEL STRIP

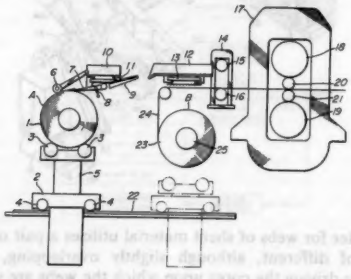
Toshiyuki Kajiwara; Tsuneo Nakanishi, and Tatsuhiro Sata, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 9, 1969, Ser. No. 862,618

Claims priority, application Japan, Sept. 13, 1968, 43/65558; Dec. 11, 1968, 43/90246

Int. Cl. B21c *47/22*

U.S. Cl. 242—78.8 **12 Claims**



A method of and an apparatus for detecting the position of the end of a coil of steel strip or other strip material which is to be paid out and setting the end of the coil at a predetermined position on the outer peripheral surface of the coil for initiating feeding of the steel strip to a rolling mill or other equipment. Support means mounting detection means is maintained in contact with the outer peripheral surface of the coil. The support means is adapted to operate in response to a variation in the outer diameter of the coil at the point of contact between the support means and the outer peripheral surface of the coil. The position of the end of the coil is detected by detecting a variation in the level of the outer peripheral surface of the coil or by detecting the action of the end portion of the coil to spring back by its own resilience as the end of the coil is moved past the detection means while the coil is rotated in a direction opposite to the paying out direction.

3,635,418

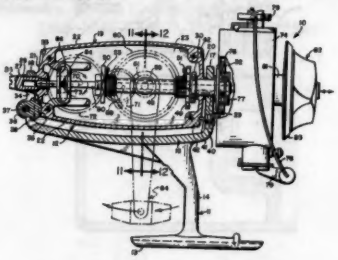
UNIDIRECTIONALLY DRIVEN LEFT- OR RIGHT-HAND SPINNING REEL

Shikizo Kamei, Kobe, Japan, assignor to Shinyei Company, Inc., New York, N.Y.

Filed July 3, 1969, Ser. No. 838,922

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.21 R **6 Claims**



A spinning reel includes a mounting bracket which supports a housing swingable about a longitudinal axis between opposite releasably locked positions for left or righted use. A bail-carrying rotor is mounted on a shaft projecting into the housing and a crank extends transversely from the housing. Two one-way clutches having a common drive direction are mounted on the shaft and are gear coupled to the crank which rotates them in opposite directions so that the shaft is driven in only one direction independent of the crank direction of rotation.

3,635,419

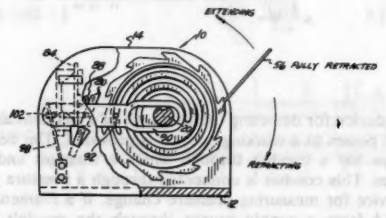
AUTOMATIC LOCKING RETRACTOR

William L. Pringle, Grosse Pointe, Mich., assignor to Jim Robbins Seat Belt Co., Clemens, Mich.

Continuation-in-part of application Ser. No. 724,687, Apr. 29, 1968, now abandoned, Continuation-in-part of application Ser. No. 771,159, Oct. 28, 1968, now abandoned. This application Oct. 17, 1969, Ser. No. 867,194

Int. Cl. B65h *75/48*

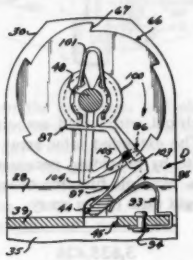
U.S. Cl. 242—107.4 **3 Claims**



A retracting reel assembly including a support means with reel means rotatably supported by the support means for

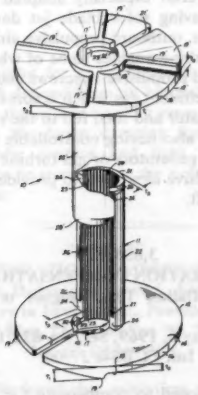
winding and unwinding an elongated flexible seat belt element thereonto and therefrom. The assembly also includes control means for controlling the rotation of the reel means which control means has a cam member rotatable about the axis of the reel means in response to rotation of the reel means. The cam member has a cam track at least a portion of which is in the form of a spiral and extends radially about the axis of rotation. A cam follower engages the cam track to be moved in a plane generally perpendicular to the axis.

3,635,420
SEAT BELT RETRACTOR
Louis Romanzi, Jr., Brighton Township, Livingston County, Mich., assignor to Irvin Industries Inc., Lexington, Ky.
Filed Jan. 15, 1970, Ser. No. 3,087
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **4 Claims**



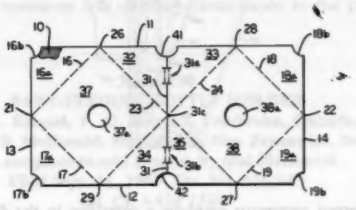
A seat belt retractor having a rotatable reel; a clutch including a first member manipulative for blocking locking action of a pawl with a ratchet wheel on initial protraction of the belt, a land portion which permits locking action of the pawl with the ratchet wheel on partial rewind of the belt and a second member manipulative to hold the pawl away from the ratchet wheel during retraction of the belt.

3,635,421
SPOOL ASSEMBLIES
Daniel E. Boland, Buffalo, and Dale E. Craig, Tonawanda, both of N.Y., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,317
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.6 **22 Claims**



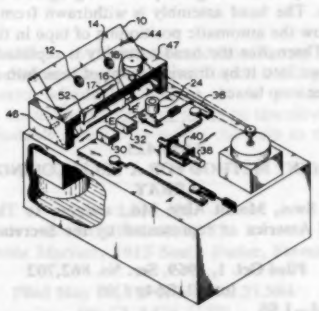
Two spool halves each include a flange and a hub half which has a semicircular cross section and which is connected to and extending from the flange thereof, with complementary tongues and grooves formed along the longitudinal mating surfaces thereof and with an inner face of each flange provided with an arcuate recess for receiving a free end of the mating hub half. The spool is assembled by aligning the mating tongues and grooves and then moving the halves slidably into engagement with each other to connect together the halves and then securing the halves together by inserting the free end of each hub half into the recess in the flange of the mating half. The outer face of each flange is formed with inclined portions or surfaces so that as the spool is rotated with a spindle, the flange is subjected to air pressures which maintain the spool on the spindle in a generally fixed position along the longitudinal axis of rotation. Longitudinal grooves are formed on the inner wall surfaces of the hub halves to receive splines formed on the spindle to secure the spool to the spindle for rotation therewith.

3,635,422
SUPPORT FOR A REEL CORE
Lloyd W. Ellson, Indianapolis, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.
Filed Dec. 10, 1969, Ser. No. 883,913
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.8 **3 Claims**



Disclosed is a support for a roll or reel core which is folded or erected from a unitary blank which has been scored or cut to provide fold lines in a unique pattern on the blank. The fold lines permit the blank to be erected into a reinforced, multilayer support for the core on which flexible material is rolled, one of the supports being used at each end of the roll core.

3,635,423
CARTRIDGE-LOADING MEANS AND METHOD FOR TAPE RECORDER
Kenneth B. Lennie, Scarborough, Ontario, Canada, assignor to 230494 Merchandising Limited, Toronto, Ontario, Calif.
Filed Feb. 5, 1970, Ser. No. 8,945
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—198 **3 Claims**



Loading or unloading a "cassette" tape recorder cartridge is facilitated by a cartridge holder which allows: insertion and

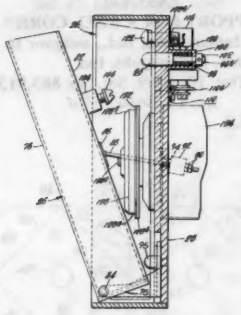
withdrawal of the cartridge into a cartridge holder diagonally between upwardly and downwardly projecting tape recorder spindles; after insertion of the cartridge in this manner, pivoting the cartridge in the holder into operative position on the spindles; and before withdrawal of the cartridge, pivoting the cartridge in the holder out of operative connection with the spindles and into the diagonal withdrawal position.

3,635,424

TAPE CARTRIDGE RECEIVING AND POSITIONING STRUCTURE

Herbert Morello, Phoenixville, and Robert J. Miller, Salford, both of Pa., assignors to Digital Information Devices, Inc., Norristown, Pa.

Filed Dec. 4, 1968, Ser. No. 781,164
Int. Cl. G11b *23/10*
U.S. Cl. 242—198 **7 Claims**



Preferred apparatus employs a cartridge in the form of a narrow casing containing a supply of magnetic tape on and between a supply reel and a takeup reel. The cartridge is inserted from above into a well in a support housing which is hinged along a bottom edge to move out from the console for loading and unloading and back to the console for cooperation with a tape drive. Spring loading causes the tape reel supporting structure to engage and center on drive hubs, and a vacuum system, including ports through the hubs, holds the reel-supporting structure to the drive hubs. Automatic threading is then accomplished. The head assembly including a pickup and recording head and suitable guide rollers is supported in the middle one of three tape loop boxes. A lever arm pivoted to the tape deck structure withdraws the head assembly from the tape deck by movement about its pivot. Indexing is accomplished by opposed flat surfaces on a wall of the tape deck and a supporting plate of the head assembly and spring means is provided between the lever arm and the head assembly to assure good positioning against the indexing surface. The head assembly is withdrawn from the tape deck to allow the automatic positioning of tape in the middle loop box. Thereafter the head assembly is replaced and the tape is drawn into it by drawing loops of tape into each of a pair of outer loop boxes.

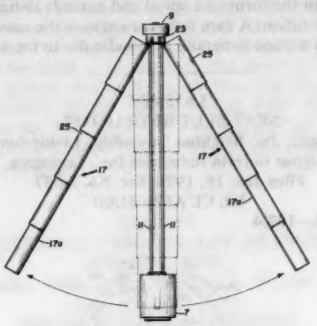
3,635,425

DEPLOYMENT METHOD FOR A TELESCOPING SOLAR ARRAY

Charles J. Swet, Mount Airy, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 1, 1969, Ser. No. 862,702
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS **5 Claims**

A method for deployment of a solar cell array, conduction of generated power from the array to the satellite, and utilization of the array and deployment means as an aid for the gravity-gradient stabilization of the satellite. The method envisions telescoping sections of a solar cell array being extended in orbit by an erectable mast and boom assembly. Power is carried from the array through electrically conductive booms and twin conducting masts, thereby eliminating



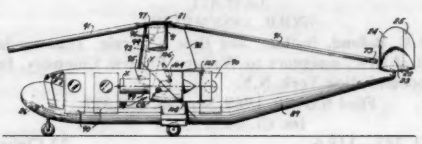
the need for electrical wiring and associated wiring guides and connectors. The extended solar array also assists in stabilizing the satellite by providing necessary gravity-gradient restoring moments. Multiple function of equipment increases the wattage to weight ratio of the array.

3,635,426

ROTARY WING TRANSPORT AIRCRAFT

Paul H. Stanley, deceased, late of Glenside, Pa. (by First Pennsylvania Banking and Trust Co., executor), assignor to Autogiro Company of America, Jenkintown, Pa.

Continuation-in-part of application Ser. No. 503,536, Oct. 23, 1965, now abandoned. This application Sept. 12, 1968, Ser. No. 759,829
Int. Cl. B64c *27/18*
U.S. Cl. 244—17.11 **19 Claims**



A rotary wing aircraft especially adapted for short haul transport service, having rotor blade jet devices providing torqueless rotor drive, outboard propulsive airscrews, and gas generators or gas turbine engines some of which provide for drive of the outboard propulsive airscrews and at least one of which provides hot effluent gas which is somewhat cooled by mixing with air or water and then fed to the rotor driving jet devices, the aircraft also having controllable means utilizing the discharge of gas generators or gas turbine engines, or the slip stream of propulsive airscrews, to provide for directional control of the aircraft.

3,635,427

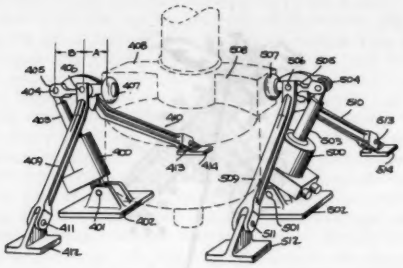
AIRCRAFT VIBRATION COMPENSATION SYSTEM

Rodney W. Balke, Dallas, Tex., assignor to Textron, Inc., Wheatfield, N.Y.

Filed May 6, 1969, Ser. No. 822,136
Int. Cl. B64c *27/00*
U.S. Cl. 244—17.27 **4 Claims**

Apparatus is disclosed to compensate for forces that are applied to the aircraft pylon from rotor blade vibratory disturbances in a rotary wing aircraft. The compensation is such that the effect of the vibratory disturbances on the

pilot's cabin, or at any other desired area in the fuselage, is minimized. The apparatus includes a signal generating device that generates a signal having the same frequency as the frequency of the forces resulting from the rotor blade vibratory disturbances. The signal is employed to control the frequency of compensating forces or motions that are applied by the apparatus of this invention between the pylon and the



fuselage. Control over the amplitude and phase of the compensating forces or motions applied between the pylon and the fuselage by the apparatus of this invention will establish an amplitude and phase for the net forces and moments on the fuselage of such a fashion that a desired portion of the fuselage, such as the pilot's cabin, can be effectively insulated from the effects of the rotor blade vibratory disturbances.

3,635,428

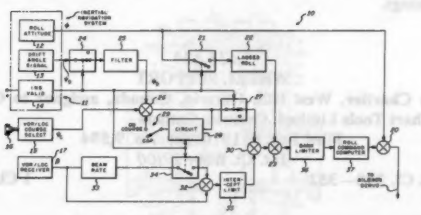
AUTOMATIC PILOT FOR NAVIGABLE CRAFT

Raymond A. Nelson, and William F. Poland, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Jan. 17, 1969, Ser. No. 791,887

Int. Cl. B64c *13/50*

U.S. Cl. 244—77 **10 Claims**



An automatic pilot for navigable craft in which the drift angle of the craft derived from an inertial navigation system is used to cancel the course heading error in the presence of wind to provide the beam damping function required to achieve asymptotic capture and tight on-course control without overshoot or stand off in the presence of crosswind and/or wind shear.

3,635,429

AIRCRAFT VIBRATION COMPENSATION SYSTEM

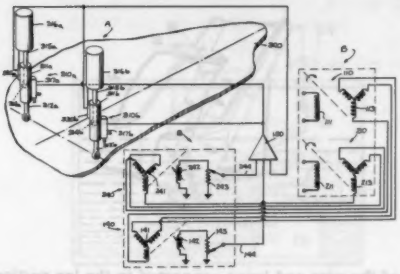
Rodney W. Balke, Dallas, and David L. Kidd, Arlington, both of Tex., assignors to Textron Inc., Providence, R.I.

Filed Mar. 27, 1970, Ser. No. 23,258

Int. Cl. B64c *17/00*

U.S. Cl. 244—93 **10 Claims**

Apparatus is disclosed that minimizes the effect of rotor blade induced vibratory disturbances at the pilot's seat and in the cabin of an aircraft. The apparatus generates a reciprocating force which is applied to the aircraft to modify the mode of vibration of the fuselage in such a fashion that the magnitude of the vibration disturbance at any selected area of the fuselage, such as at the pilot's seat, is minimized. The compensatory reciprocating force is developed by vibrating a mass mounted on the fuselage. A control signal equal in frequency to the disturbing rotor blade vibration is



applied to the vibrating mass, to cause it to reciprocate relative to the fuselage at a frequency equal to the undesired disturbing vibration. Pilot or automatic variation of the phase and amplitude of the control signal permits the pilot to achieve a minimum felt vibratory disturbance at the pilot's seat.

3,635,430

BABY-FEEDING BOTTLE HOLDER

Armand J. Emond, P. O. Box 62, Pembroke, Ontario, and Duncan B. McDonald, Fredericton, New Brunswick, both of Canada, assignors to said Emond, by said McDonald

Filed Sept. 11, 1969, Ser. No. 856,943

Int. Cl. A47d *15/00*

U.S. Cl. 248—102 **3 Claims**

A baby bottle or toy holder formed from a strip of flexible material including integrally formed bottle-holding and toy-holding means; adjustable fastening means on said flexible material to maintain the bottle or toy in an operative position and an adjustable fastener to secure the strip to the baby's body.

3,635,431

BOTTLE HOLDER

Charlie Dwain Mariner, 1013 South Butler, Farmington, N. Mex.

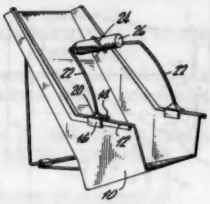
Filed May 18, 1970, Ser. No. 37,984

Int. Cl. A47d *15/00*

U.S. Cl. 248—104 **2 Claims**

A holder for an infant bottle adapted to be secured to the arms of an infant seat and the like comprising a length of

resilient wire having a substantially U-shaped configuration with two substantially parallel leg portions and a central portion connecting the leg portions, the central portion including an expandable loop formed therein for holding an infant bottle, the loop comprising approximately one and one-half



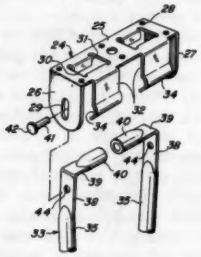
turns of the wire and being connected to the leg portions at substantially diametrically opposite points of the loop, the turns of the wire being spaced so as to provide a gripping contact of bottle over a substantial portion of the length thereof, and means for securing the holder to the arms of an infant seat.

3,635,432

COMBINATION SUPPORT MEMBER AND HINGE LOCK MEANS

Irvin Hollander, Dayton, Ohio, assignor to TüDee Products, Dayton, Ohio

Filed Oct. 10, 1969, Ser. No. 865,285
Int. Cl. F16m *11/38*
U.S. Cl. 248—188.6 **8 Claims**



A leg and hinge unit for supporting a table or the like and which permits the leg to be folded beneath the table for storage. The unit includes a U-shaped bracket having a baseplate portion adapted to be permanently secured to the underside of the table with the legs of the U extending therefrom. A support leg is slidably and pivotally secured to the U-shaped bracket by means of pins fixed to the support leg so as to ride in vertical slots located in the legs of the U-shaped bracket. With the table in its horizontal position and the support leg in its vertical position the pins are at the tops of the slots and the support leg is locked in position by means of shallow channel members on the underside of the bracket plate which receive end portions of the support leg. When the support leg is moved to a position substantially parallel to the table, the pins slide downwardly in the slots and the end portions are moved out of the channel members so as to be received in vertical members depending from one side of the bracket baseplate to thus lock the support leg in its horizontal position.

3,635,433

ARTICLE-HOLDING APPARATUS

Malcolm J. Anderson, 42-43 149th Street, Flushing, N.Y.

Filed June 11, 1969, Ser. No. 832,069
Int. Cl. A47f *5/00*
U.S. Cl. 248—309 **1 Claim**

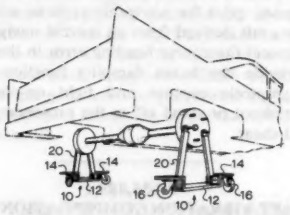
An article-holding device for fishing poles or other rodlike articles comprising a base having at least one article-holding opening and a movable, spring-mounted plate member lying on the base. The plate has an opening which is partially enclosed from the exterior by a flange. The opening in the plate lies directly above the base opening when the spring means are uncompressed. The flange holds the article in the opening. Insertion of the article is accomplished by pressing it against a beveled portion of the flange. Removal is accomplished by compressing the spring means thereby moving the flanges in the plate out of blocking engagement with the openings.

3,635,434

WHEEL SUPPORT

Guy Chartier, West Hill, Ontario, Canada, assignor to Guy Chart Tools Limited, Ontario, Canada

Filed Feb. 9, 1970, Ser. No. 9,594
Int. Cl. B60r *27/00*
U.S. Cl. 248—352 **1 Claim**



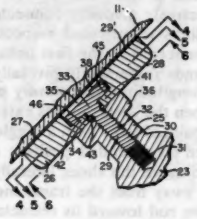
A support takes the place on an automobile of a wheel removed, having a caster support designed to rest on the ground, an arm rigidly connected to the support attached to one wheel bolt and an arm pivotally connected to the support attached to the other wheel bolt.

3,635,435

BREAKAWAY SUPPORT FOR REAR VISION MIRROR

Ronald C. Perison, Sr., East Aurora, N.Y., assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Mar. 16, 1970, Ser. No. 19,809
Int. Cl. B60r *1/04*
U.S. Cl. 248—475 A 5 Claims



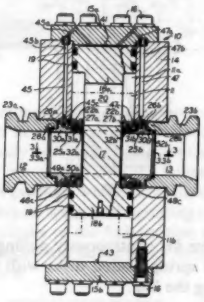
A rear vision mirror support including a stem mounting a rear vision mirror at one end and having a connector at its other end securing it to a base mounted on a vehicle, the connector including a bolt having an annular groove thereon which weakens it sufficiently so that it will fracture when the mirror-supporting stem is subjected to an impact force of a predetermined value.

3,635,436

STRAIGHT-THROUGH FLOW VALVE WITH RESTRICTING SEALS

Alfred Tillman, Mt. Tabor, N.J., assignor to Marotta Scientific Controls, Inc., Boonton, N.J.

Filed Apr. 27, 1970, Ser. No. 32,223
Int. Cl. F16k *39/04*
U.S. Cl. 251—31 11 Claims



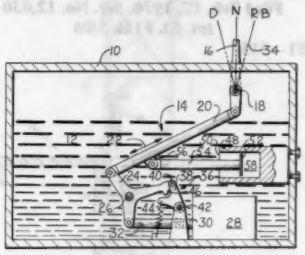
This flow straight-through valve has a valve element with piston heads at both ends which slide in a cylindrical valve chamber. A transverse opening through the valve element, between the piston heads, is moved into alignment with inlet and outlet passages on opposite sides of the cylindrical valve chamber to open the valve. The transverse opening is of the same cross section as the inlet and outlet passages. The valve element has slabbed-off flat surfaces on the sides that confront the inlet and outlet passages. Moveable seals are resiliently urged toward the flat surfaces, and fluid pressure means, which move the valve element between open and closed positions, cause the seals to move away from the valve element, and thus unseal it, when the fluid pressure is applied to move the valve element.

3,635,437

DAMPING MEANS FOR CONTROL LEVERS

Harold F. Bieringer, Peoria; Lloyd D. Finley, Lockport, and William R. Stary, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 22, 1970, Ser. No. 30,810
Int. Cl. F16k *31/48*
U.S. Cl. 251—48 3 Claims



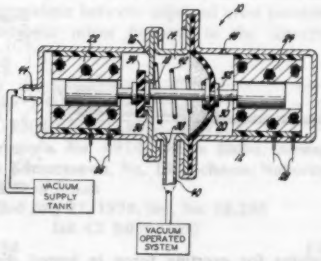
The disclosed embodiment of the invention is a damper for control mechanisms which are employed in hydraulically controlled implements and which are normally subject to violet forces during portions of an operating cycle. In hydraulically controlled implements, certain operations which are initiated by an operator can be terminated automatically by means of a kickout circuit. A control lever, if moved to an actuated position by the operator, can be returned to a neutral position by the kickout circuit. Excessively high forces may be generated when the control lever is returned to its neutral position, which forces are transmitted to the control level and can be imparted to any object in its path of travel from its actuated position to its neutral position. The disclosed damper substantially reduces the transmitted forces and is generally formed of a cylinder having a closed end and a piston mounted for reciprocal movement therein and pivotally secured to the control lever. The diameter of the piston is slightly less than the diameter of the bore of the cylinder to permit relatively unrestricted movement therebetween. The cylinder is immersed in the hydraulic fluid contained in the hydraulic fluid tank and employs that fluid for developing a pressure gradient from one side of the piston to the other side thereof whenever a large force is applied to the piston to move it within the cylinder.

3,635,438

POWER-OPERATED CONTROL VALVE

Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

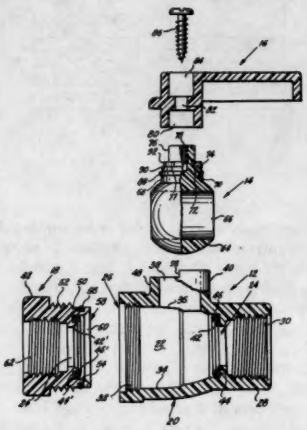
Filed Oct. 2, 1969, Ser. No. 863,148
Int. Cl. F16k *31/06*
U.S. Cl. 251—137 1 Claim



A power-operated control valve for fluid systems includes a pair of electrical solenoids each briefly energizable to move

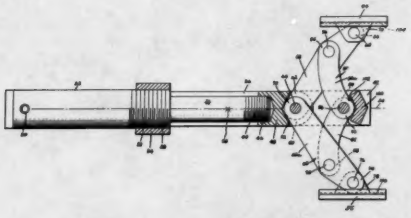
a valve member to a respective open or closed condition thereof, the valve member being bistable in such positions from the influence of a coil spring and a pressure differential responsive diaphragm.

3,635,439
BALL VALVE
John D. McNally, 2714 Caulder, Des Moines, Iowa
Filed Feb. 17, 1970, Ser. No. 12,030
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **5 Claims**



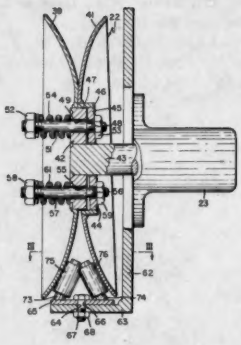
A two-way flow control ball valve device having an improved valve seat for an O-ring seal so that there is no binding or restriction on the movement of the ball under high pressures. Includes a housing having different diameter openings at opposite ends with the opening at the smaller end defining a fixed valve seat and a combined removable adapter plug and valve seat mountable in the larger end. The housing is designed for mounting of the ball valve so that the seal connection between the valve steam and the operating lever can be made from the outer side of the housing after the valve has been mounted therein.

3,635,440
FORCE-EXERTING APPARATUS
James J. Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.
Filed July 20, 1970, Ser. No. 56,536
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **24 Claims**



Apparatus for exerting force in lateral directions with respect to a longitudinal axis, the apparatus being particularly adapted for use in straightening deformed rolls of sheet stock. A fluid power cylinder is provided having a piston rod coaxial with the axis and being movable between retracted and extended positions. A pair of elongated, transversely spaced, parallel frame members is provided having rear ends secured to opposite sides of the cylinder and extending longitudinally forwardly on opposite sides of the piston rod. A pair of force-exerting shoes is provided respectively on opposite sides of the frame members and movable laterally outwardly away from and inwardly toward the frame members. A first pair of links is provided having inner ends respectively pivotally connected to the outer end of the piston rod and outer ends respectively pivotally connected to the shoes. A second pair of links is provided respectively having outer ends pivotally connected to the first links intermediate their ends and inner ends respectively pivotally connected to the frame members longitudinally forwardly of the outer end of the piston rod when the same is in its extended position. The first and second pairs of links form a toggle, movement of the piston rod toward its extended position causing the toggle simultaneously to move the shoes laterally outwardly in opposite directions away from the frame members, and movement of the piston rod toward its retracted position causing the toggle simultaneously to move the shoes laterally inwardly toward the frame members.

3,635,441
FISHING APPARATUS AND SHEAVE THEREFOR
William B. Haines, Freeport, Nova Scotia, Canada, assignor to Norman S. Blodgett, Worcester, Mass., a part interest
Continuation of application Ser. No. 476,263, Aug. 2, 1965, now abandoned. This application Apr. 23, 1969, Ser. No. 818,843
Int. Cl. A01k *73/06*
U.S. Cl. 254—138 **5 Claims**

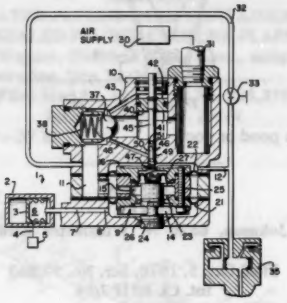


A power sheave for continuously pulling a line, the sheave having a pair of spring-loaded disks with facing convex surfaces for grasping the line.

3,635,442
AIR BALANCER SAFETY SYSTEM
Otmar M. Ulbing, Berkshire, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,832
Int. Cl. B66d *1/08*
U.S. Cl. 254—168 **4 Claims**

A balancing hoist control system including a pressure regulator valve and having a check valve located between the main air supply and the main inlet of the regulator valve and operative to close in response to a failure in the air supply, thereby preventing the air in the hoist from escaping from the main inlet. An air-operated piston member disables the regulator in the event of the loss of pressure of the air supply to prevent the regulator valve from exhausting the main balancing chamber of the hoist. This piston member also in-

terconnects the main air supply chamber of the regulator valve with the pilot air chamber so that an operator can use



the control member to slowly lower the load after the failure of the air supply without waiting for the repair of the air supply.

3,635,443

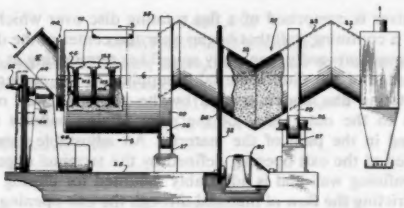
DISPERSION HEAD FOR SOLIDS-LIQUIDS BLENDER

John J. Fischer, East Stroudsburg, Pa., assignor to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Filed Nov. 19, 1970, Ser. No. 91,107

Int. Cl. B01f *9/08*

U.S. Cl. 259—3 **10 Claims**



A liquid dispersion head, which is supported on the end of a liquid supply shaft in a container, is rotated at high speed, so as to simultaneously introduce liquid into and effect agitation of dry material introduced into the container. The spray head includes a hub portion, which is mounted on the liquid supply shaft, and a liquid spray and agitating assembly, which is mounted concentrically of the hub portion and defines two or more mutually supporting liquid spray devices spaced axially of the hub portion.

3,635,444

STATIC MIXER

Charles Potter, Lakewood, Ohio, assignor to AMVIT, Cleveland, Ohio

Filed Sept. 8, 1970, Ser. No. 70,288

Int. Cl. B01f *5/06*

U.S. Cl. 259—4 **8 Claims**

The static mixer has a static rigid mixing unit contained in a coaxial barrel which is mounted at its ends, respectively, in an inlet header through which materials to be mixed are fed under pressure to and through the unit, by which they are mixed, and in an outlet header through which the mixture is discharged. The unit comprises a row of vanes arranged to divide the material into separate streams, reassemble them in different combinations, and redivide and combine the combinations, repeatedly, as the material passes through the unit.

The characteristic feature is that the barrel and unit are composed of different materials so related that the barrel can be destroyed readily, or rendered readily destructible, by

means which, when and as applied to the combined barrel and unit so that both are subjected thereto, leaves the unit substantially intact.

3,635,445

WORM-TYPE CONVEYOR MIXER

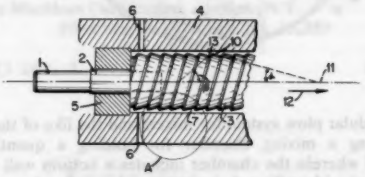
Johann Schwab, and Walter Putz, both of Vienna, Austria, assignors to Semperit Oesterreichisch-Amerikamsch Gummiwerke Aktiengesellschaft, Vienna, Austria

Filed Nov. 12, 1968, Ser. No. 774,784

Claims priority, application Austria, Nov. 13, 1967, 10229/67

Int. Cl. B01f *7/02, 15/02*; B29f *3/02*

U.S. Cl. 259—22 **8 Claims**



A worm-type conveyor mixer disposed in a mixing chamber and having threadlike convolution formed thereon with a working surface between adjacent crest portions, the worm-type conveyor mixer tapering in the direction of material flow.

3,635,446

LIQUIDS SHAKING DEVICE

Yoshinori Kurosawa, No. 4914, Ohaza Shiba, Kawaguchi, and Takashi Katsurasawa, No. 18, 5-chome, Noborito-cho, Koshigaya, both of Japan

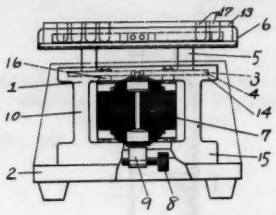
Filed July 27, 1970, Ser. No. 58,250

Int. Cl. B01f *11/00*

U.S. Cl. 259—54 **1 Claim**

Liquid-shaking device comprising an elastic frame, a board held in the upper portion of the frame, a holding plate propped by supports above the board, an electric motor suspended underneath the board and an adjustable eccentric

weight at the lower end of the axis of the electric motor. Microvibration by the electric motor and the weight is effected over the holding plate to shake the liquid contained in the vessels provided on the holding plate.

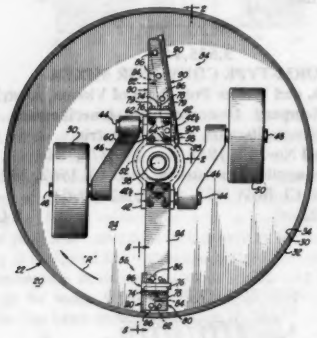


3,635,447

MODULAR PLOW SYSTEM FOR MIXERS AND THE LIKE

John H. Kauffman, Crystal Lake, and Ralph J. Donat, Chicago, both of Ill., assignors to National Engineering Company, Chicago, Ill.

Filed June 29, 1970, Ser. No. 50,667
Int. Cl. B01f 7/16
U.S. Cl. 259—107 **8 Claims**



A modular plow system for mixers and the like of the type employing a mixing chamber for holding a quantity of material wherein the chamber includes a bottom wall and a peripheral sidewall and a rotary mixing head mounted therein. The mixing head includes plow support means movable over the bottom wall, and a plow backing member is provided with an advancing face angularly disposed with respect to the bottom wall of the chamber and a lower edge spaced above the bottom wall. A planar, modular, replaceable plow member is removably mounted on the advancing face of the backing member and means are provided for securing the plow member to the backing member in a plurality of different positions whereby a selected edge of the plow may be placed in the region of most intense wear.

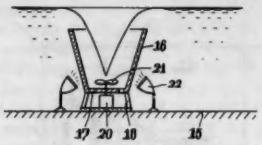
3,635,448

POOL WITH VORTEX GENERATOR

Hiroo Okada, Sagamihara-shi, Kanagawa-ken, Japan, assignor to Kuritz Water Industries Ltd., Higashi-ku, Osaka, Japan

Filed June 11, 1969, Ser. No. 832,105
Int. Cl. B01f 7/16
U.S. Cl. 259—108 **4 Claims**

A pit or hollow vessel formed in the bottom of a pond or pool with a rotor blade arrangement therein for generating a vortex in the pond or pool.

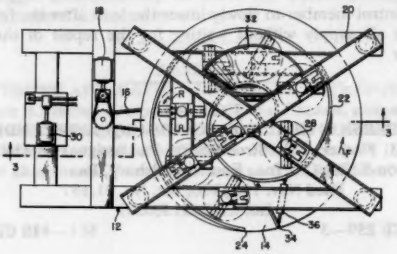


3,635,449

MIXER

Milton W. Johnson, 6620 N. Willamette Blvd., Portland, Oreg.

Filed Oct. 5, 1970, Ser. No. 77,863
Int. Cl. B01f 7/04
U.S. Cl. 259—179 **3 Claims**



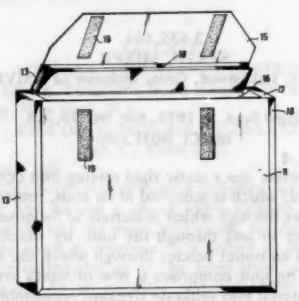
A mixer is comprised of a flat rotating disc over which is placed a confining wall that begins near the center of the disc and curves outwardly, generally spirallike, terminating at the outer edge of the disc. Material is supplied at the center of the rotating disc and is guided by the confining wall outwardly to the outer edge of the disc. Mixing paddles are disposed in the path of the material. An adjustable gate is provided at the exit opening defined by the terminal edge of the confining wall and is adjustably mounted for closing off or restricting the flow of material through the exit opening.

3,635,450

CONTAINER FOR CONVEYORS

Erich Schneider, Wiesensteig, Germany, assignor to Organisation Ralfs K.G., Wiesensteig (Wurtt.), Germany

Filed July 29, 1970, Ser. No. 59,148
Claims priority, application Germany, Aug. 1, 1969, G 69 30 458.1
Int. Cl. B65d 85/30, 5/62
U.S. Cl. 229—14 C **8 Claims**



A container comprising front and rear panels interconnected along the peripheral edges by a resilient wall, covered

by flexible sheet material having marginal flaps secured to the edges of the panels.

3,635,451

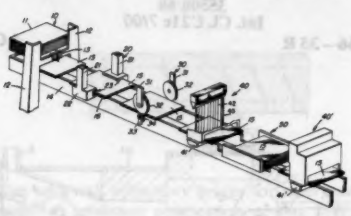
CORRUGATED PAPER BOARD CONTAINER HAVING SEALED FLUTED CLOSURE FLAPS

Franklin J. Wagner, Overland Park, Kans., assignor to Westvaco Corporation, New York, N.Y.

Filed May 16, 1969, Ser. No. 825,375

Int. Cl. B65d *5/02, 25/14*

U.S. Cl. 229—37 R **1 Claim**



Method and apparatus is disclosed for protecting a corrugated paperboard product from the deteriorating effects of high humidity or extreme dust conditions, wherein the exposed fluted edges of the corrugated paperboard stock are cut, crushed and coated with a barrier material to seal the exposed flutes thereby preventing the impregnation of water or dust into the interior of the corrugated paperboard stock.

3,635,452

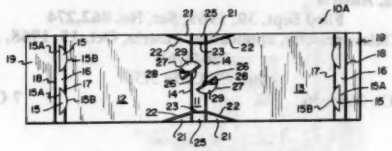
WRAPAROUND CARRIER

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 3,974

Int. Cl. B65d *75/06*

U.S. Cl. 229—40 **2 Claims**



A wraparound carrier is formed from a unitary paperboard blank and is particularly adapted to transport large glass bottles. The carrier consists of a top panel with side panels extending therefrom and having flaps at the distal ends of the side flaps, these being folded about the bottom of the bottles and being secured together. The top panel overlying the tops of the bottles is scored and slit to provide a pair of finger holds, each defined by a fold down tab foldable with respect to a tab score line intersecting an upper score line connecting the top panel and correlative side panel. Each of the tab score lines has a cut line connecting the ends thereof, and the tab formed thereby has a score line therein extending at right angles to the upper score line connecting the top panel with a side panel. Upon folding of the tabs which are in facing relationship by reason of the parallel score lines forming the tabs in the top panel, the tabs are enabled to be folded against the undersides of the top and a correlative side panel. The two folded tabs thus provide a pair of finger holds, and at the same time the top panel and the side panels are strengthened for transport of the containers within the wrapper.

3,635,453

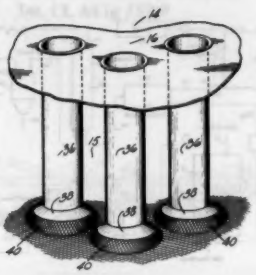
DIFFERENTIAL PRESSURE AIR IMMERSION WASHER-CONDITIONER

William J. Caldwell, P.O. Box 456, Independence, Mo.

Continuation of application Ser. No. 745,171, July 16, 1968, now abandoned. This application June 15, 1970, Ser. No. 48,873

Int. Cl. B01f *13/02*

U.S. Cl. 261—30 **2 Claims**



An air washer and conditioning unit comprising a primary pressure chamber communicating at its upper portion with the discharge of a fluid pressure pump and having a lower portion immersed in a body of liquid through which the air flowing in the chamber from the pump is expanded and then uniformly discharged and distributed up through the liquid into a secondary pressure chamber embracing the primary chamber.

3,635,454

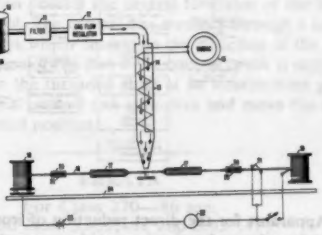
APPARATUS AND PROCESS FOR THE REMOVAL OF INSULATION FROM WIRE

Raymond W. Angelo, Endwell, and Howard G. Houghtalen, Johnson City, both of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1970, Ser. No. 35,359

Int. Cl. F27b *9/28*

U.S. Cl. 263—3 **8 Claims**

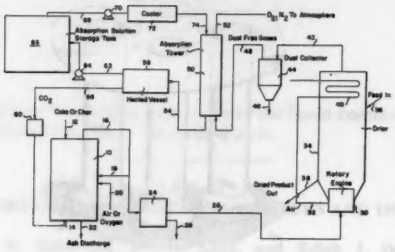


The apparatus and process for the rapid and effective removal of organic insulating material such as Teflon (Trademark of E. I. du Pont de Nemours & Co.) TFE, polytetrafluoroethylene, FEP, fluorinated ethylene-propylene, or the like, from fine or superfine wire by the controlled application of a stream of hot gas. The apparatus includes testing equipment to verify the proper operation of the insulation stripping apparatus.

3,635,455
METHOD OF OPERATING A DRIER

Cecil J. Johnson, Columbia City, Ind., assignor to Totai Energy Corporation, Columbia City, Ind.

Continuation of application Ser. No. 810,259, Mar. 25, 1969, now abandoned. This application July 7, 1970, Ser. No. 56,148
Int. Cl. F26b *3/00*
U.S. Cl. 263—52 10 Claims

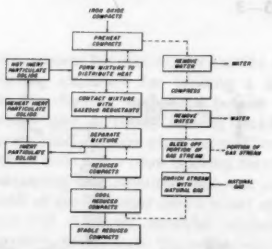


The method of preparing gases for use in drying particulate materials wherein hot carbonaceous materials are gasified to produce carbon monoxide. The carbon monoxide is combined with oxygen and used as fuel for driving a rotary internal combustion engine. The exhaust gases from the engine are used to dry wet, particulate materials and to heat the air used in the rotary engine. The exhaust gases are then cleaned and carbon dioxide is removed by an absorption process and is recycled for use in the carbon gasification step.

3,635,456
APPARATUS FOR DIRECT REDUCTION OF IRON OXIDE COMPACTS

John A. Anthes, Carnegie, and Joseph Vlnaty, Aliquippa, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1970, Ser. No. 33,002
Int. Cl. F27d *17/00*
U.S. Cl. 266—19 6 Claims

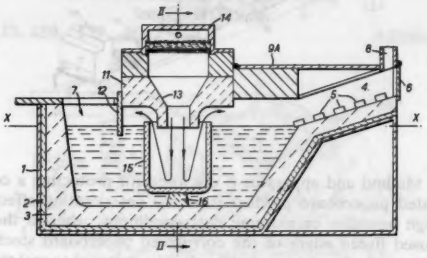


Apparatus for the direct reduction of iron oxides in compact form by preheating iron oxide compacts and enveloping them in hot inert particulate solids at the top of a columnar reactor then passing the mixture downwardly through the reactor countercurrent to an upward flow of natural gas that is introduced into the reactor bottom. Contact of the natural gas and the compacts with the hot solids results in reformation of the natural gas by reaction with carbon dioxide and the production of hydrogen and carbon monoxide, which hydrogen and carbon monoxide reduce the iron oxide of the compacts. Hot gases from the reactor are passed upwardly through a preheater for incoming iron oxide pellets and are then cooled, cleaned, and a portion returned to the bottom of the reactor. The reduced heated compacts are separated from the inert solids at the bottom of the reactor and are passed countercurrent to the natural gas that is being conducted to the reactor to heat it prior to introduction of the gas into the reactor bottom.

3,635,457
FURNACES FOR MOLTEN METAL

David W. King, Solihull, England, assignor to Morganite Thermal Desings Limited, Norton, Worcester, England

Filed July 22, 1969, Ser. No. 843,582
Claims priority, application Great Britain, July 25, 1968, 35500/68
Int. Cl. C21c *7/00*
U.S. Cl. 266—33 R 4 Claims

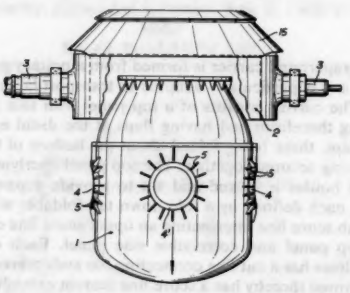


A furnace for molten metal comprises a refractory bath to hold metal surrounding a heater which consists of a cup-shaped refractory vessel which stands in the bath and receives a high-velocity stream of hot gas directed into the mouth of the vessel from a fuel burner.

3,635,458
TILTABLE CRUCIBLE OR CONVERTER

Othmar Puhringer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

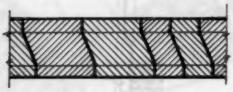
Filed Sept. 30, 1969, Ser. No. 862,274
Claims priority, application Austria, Oct. 15, 1968, A 10041/68
Int. Cl. C21c *5/50*
U.S. Cl. 266—36 7 Claims



The invention provides an improvement of the converter supporting arrangement disclosed in U.S. Pat. No. 3,477,706, enabling easy dismounting of the converter from its carrying ring to allow exchange vessel operation. To this end, the supporting means mounting the converter on its carrying ring, comprising annular lugs on the converter and cylindrical

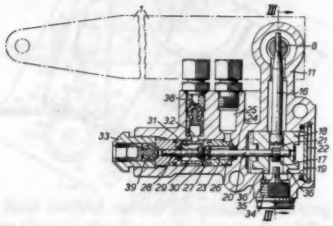
disks on the carrying ring engaging therewith, are releasable in that the disks are guided in a recess of the carrying ring to be movable into and out of engagement with said annular lugs by adjusting means.

3,635,459
REFRACTORY BRICK HAVING OBLIQUE SURFACE
Arrigo Mare, Via Porta degli Archi N.3, Genoa, Italy
Filed Feb. 29, 1968, Ser. No. 709,488
Int. Cl. C21b *7/06, 9/06;* **C21c** *5/44*
U.S. Cl. 266—43 **4 Claims**



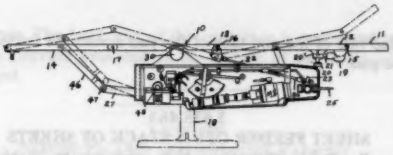
Bottom and wall refractory bricks for steel casting ladles are shaped to minimize penetration of slag into the lining formed by courses of the refractory bricks to prolong the life of the refractory bricks and to improve performance and lessen maintenance. The bricks have an oblique tilted midpart and end equal right parallelepipedal top and bottom socles or end surfaces. The long side of each brick is double the short side.

3,635,460
VEHICLE SUSPENSION LEVELLING VALVES
Brian R. Shilton, and Donald J. Byron, both of Lincoln, England, assignors to Clayton Dewandre Company Limited
Filed Aug. 18, 1969, Ser. No. 851,029
Claims priority, application Great Britain, Aug. 21, 1968, 40,007/68
Int. Cl. B60g *17/04*
U.S. Cl. 267—65 D **7 Claims**



A levelling valve for use in a vehicle suspension system, said valve comprising a lever adapted to be connected at one end to the vehicle axle or to a suspension member and pivotally mounted at the other end on the body of said valve, a shaft rotatable in response to movement by said lever, an operating member connected to said shaft and adapted to act on a piston in response to rotational movement of said shaft, said piston being provided with a groove or slot in which the operating member is received, a cylinder filled with damping fluid and housing said piston, and a valve spindle movable in response to movement of said piston to connect one or more suspension units of the vehicle to a source of fluid pressure or to exhaust depending on the direction of movement of the spindle and hence the lever, wherein the piston is normally located in central position in the cylinder and is movable towards one end or other of the cylinder when the lever moves, the movement of the piston towards the ends of the cylinder being damped and means being provided to allow undamped return of the piston to the central position in the cylinder.

3,635,461
SURGICAL TABLE AND CONTROL
Edward A. Bellucci, Erie, and Carl J. Winschel, Fairview, both of Pa., assignors to American Sterilizer Company, Erie, Pa.
Filed Nov. 14, 1969, Ser. No. 876,690
Int. Cl. A61g *13/00*
U.S. Cl. 269—325 **16 Claims**



A control for an apparatus, for example, an operating table, having a plurality of parts for moving the parts of the table individually and selectively to any of a plurality of selected positions. The control is carried out by a rotated shaft having spaced cams on it spaced from each other for moving the individual parts of the table. Each cam operates its table part when the camshaft is moved to a particular position. The camshaft is moved by a threaded shaft which has nuts which are driven to any one of a plurality of positions by a motor controlled by manually actuated selector switches. The selector switches are connected in the circuit with the motor in such a manner that when a selector switch is depressed, the threaded shaft will be rotated until the cam is driven to a position where it opens the corresponding one of the cam actuated switches and stops the motor. The movement of the camshaft is in proportion to the movement of the cam on the threaded shaft. The switching is carried out through a system of relays such that the motor always drives the threaded shaft in the direction to move the cam by the shaft through a minimum distance to reach any new position. The threaded shaft may also be rotated manually to move the camshaft and thus control the several functions of the table by manual control. The control has memory through a series of electrical relays which determine the direction of the motor. It also has memory in that if the control crank is stopped with the cam on the threaded shaft at an intermediate position, the electrical control can take over and move the cam to the next selected position.

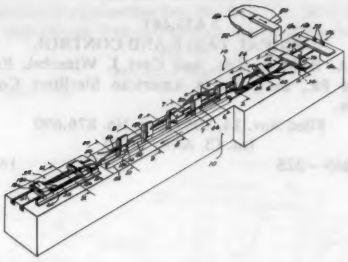
ERRATA

For Class 270—86 see:
Patent Nos. 3,635,462 and 3,635,473

3,635,462
PAD-FOLDING MACHINE
Curt G. Joa, Box 1121, Boynton Beach, Fla.
Continuation of application Ser. No. 763,718, Sept. 30, 1968, now abandoned. This application Aug. 21, 1970, Ser. No. 66,117
Int. Cl. B65h *45/22*
U.S. Cl. 270—86 **7 Claims**

Disclosed herein is an apparatus for automatically folding a pad while a conveyor is moving the pad along the longitu-

dinal axis of a base. The apparatus includes a number of guides mounted on the base to fold the pad in half and to



overlap one of the end tabs of the pad across the folded ends of the pad.

3,635,463

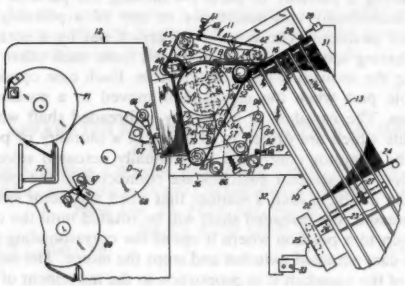
SHEET FEEDER OFF A STACK OF SHEETS

Anton R. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Mountainside, N.J.

Filed May 8, 1970, Ser. No. 35,697

Int. Cl. B65h *3/04, 29/14*

U.S. Cl. 271—6 **10 Claims**



A sheet feeder for transferring sheets from a stack of sheets and forming them in a second stack of sheets, and including two sheet pickup belts disposed to singly remove sheets from the first stack and place them in an imbricated relation and move them to a bed which strips the sheets from the belts and places them into a second stack. A motor is used for driving the belts, and a sensor is used for detecting the height of the second stack and to thereby turn the motor off and on for driving the belts to control the height of the second stack. The belts are adjustable for positioning to select the height of the second stack and also for positioning to accommodate sheets of different lengths. A rotating brush for singly feeding the sheets from the first stack and onto the belts in the imbricated or stream relation.

3,635,464

SHEET-STRIPPING DEVICE IN PRINTING PRESSES

Otto Gramlich, Mannheim, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

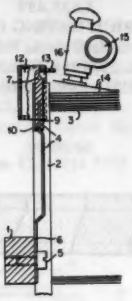
Filed Dec. 15, 1969, Ser. No. 884,970

Claims priority, application Germany, Dec. 23, 1968, P 18 16 491.5

Int. Cl. B65h *3/56*

U.S. Cl. 271—18 R **8 Claims**

Sheet-stripping device for printing press having means for pneumatically raising the uppermost sheet of a supply stack at a leading edge thereof includes a plurality of strippers disposed between vertically extending and horizontally spaced stop members for the supply stack, the strippers, respectively, comprising a rodlike holder having a free upper



end, and a removable cap of elastic material mounted on the free end of the holder, the cap having at least one stripper fin extending toward the supply stack and projecting over the uppermost sheet of the supply stack.

3,635,465

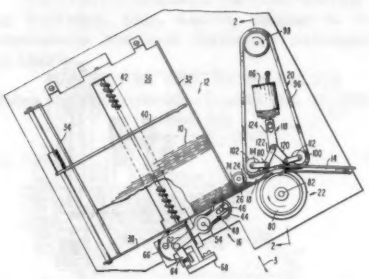
DOCUMENT SEPARATOR CONTROL SYSTEM

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,808

Int. Cl. B65h *3/06*

U.S. Cl. 271—41 **11 Claims**



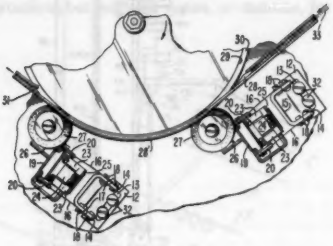
There is disclosed herein a portion of a document transport system including a document feeding unit and a document separator unit. The document feeding unit dispenses a plurality of overlapping documents into a guideway upstream from the separator unit. The separator unit functions to restrict the travel of all overlapping documents allowing only the single front document to continue along the document guideway and to space the documents entering the document guideway. A control system for the document separator unit functions to maintain the forces between the documents and the separator unit to restrict the travel of the overlapping documents. In the preferred embodiment, the separator unit is an endless belt which is moving in a direction opposite to the normal direction of document travel. The control system functions according to the basic frictional equation, $F=fN$, to vary the normal force, N, thereby maintaining the frictional force, F, substantially constant.

3,635,466

ELASTIC MOUNTING ASSEMBLY

Guy A. Townsend, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 20, 1970, Ser. No. 39,004
Int. Cl. B65h *9/16*
U.S. Cl. 271—52 14 Claims



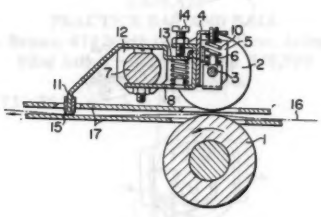
An elastic mounting assembly having two sets of flexural members each set being flexible in a direction transverse with the other set. Acting in combination the flexures allow a mounted body to be movable in tension from a biased position upon a surface defined by the transverse directions of flexibility of the two sets of flexural members.

3,635,467

PAPER FEED CONTROL SYSTEM

Yugoro Kobayashi, and Tsutomu Yamakami, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,455
Claims priority, application Japan, Dec. 25, 1968, 43/94553
Int. Cl. B65h *9/05*
U.S. Cl. 271—53 5 Claims



A paper feed control system in which a braking means holds a paper sheet or the like at the instant that follower rollers are spaced apart from a feed drive roller. The paper sheet or the like may be stopped at a predetermined position regardless of feed speed.

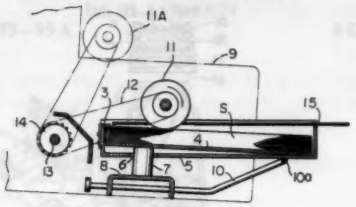
3,635,468

SHEET CONTAINER AND FEEDING DEVICE

Shigeru Suzuki, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 12, 1969, Ser. No. 849,333
Claims priority, application Japan, Sept. 30, 1968, 43/85058
Int. Cl. B65h *1/04*
U.S. Cl. 271—61 8 Claims

A detachable copy sheet container for automatic sheet-feeding device of a copying machine, wherein the front end of a receiving plate on which copy sheets are placed is supported from the outside of the container by a guide post passing through an opening on the bottom of the container, the back end being supported by the bottom plate of the container, and the front end of the container itself is supported by corner separators contacting the copy sheet. The corner separators are provided at upper parts of the front end of the container. The back end of the container is supported by an outside fulcrum provided at the middle of the width of the back end.

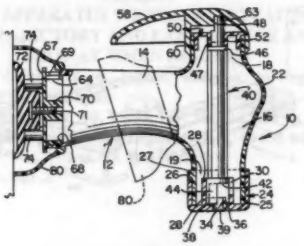


3,635,469

NOVELTY AND AMUSEMENT FAUCET

William A. McMillan, Los Angeles, Calif., assignor to H. Fishlove & Co., Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 28,356
Int. Cl. A63j *23/00*
U.S. Cl. 272—27 N 3 Claims



A novelty and amusement device comprising a simulated faucet having a suction cup whereby the faucet can be detachably secured to any supporting surface which will retain a suction cup, to present the appearance of a conventional faucet properly supported thereon. The simulated faucet provides a container which may be filled with liquid or the like so that by turning the faucet handle the liquid in the container will flow from the faucet, simulating that of a conventional faucet. The simulated provides an unexpected result when mounted on an unconventional surface such as a dining room or bedroom wall and the above stated turning action is taken.

3,635,470

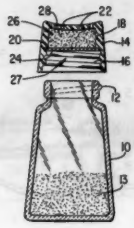
NOVELTY AND AMUSEMENT CONTAINER

William A. McMillan, Los Angeles, Calif., assignor to H. Fishlove & Co., Chicago, Ill.

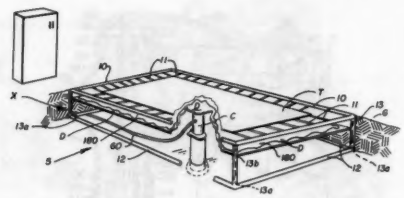
Filed Apr. 13, 1970, Ser. No. 28,357
Int. Cl. A63j *23/00*
U.S. Cl. 272—27 N 5 Claims

A novelty and amusement device comprising a transparent container for containing a condiment, such as salt or the like, which is visible through the container, and providing a cap for the container of opaque material which is adapted to contain a refillable supply of another condiment, such as pepper or the like, which is invisible to the user and observers and

which when the device is inverted as in conventional use will dispense the condiment in the hidden compartment and the condiment in the transparent container will remain within the container.



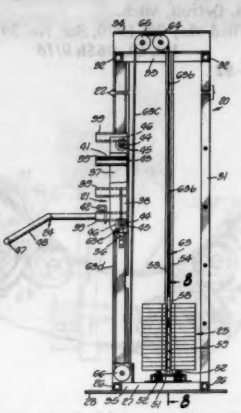
3,635,471
CONTROLLED TRAMPOLINE STRUCTURE
Charles D. Caron, P.O. Box 1153, Twin Falls, Idaho
Filed Feb. 17, 1969, Ser. No. 799,761
Int. Cl. A63b *5/10*
U.S. Cl. 272—65 **4 Claims**



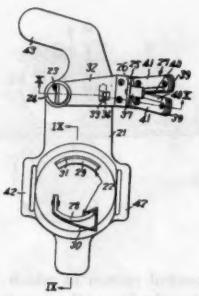
This invention is a trampoline net structure having means for rendering the same inoperable by placing an object in contact with a trampoline net member or loosening the support of the trampoline net member. This invention relates to a trampoline net structure having control means to render the net structure inoperative with the control means having a coin accumulator mechanism and a warning signal to inform the user to disengage from the trampoline net before the same is automatically made inoperable. More specifically, this invention relates to a hydraulic structure operable to move a support object into and out of engagement with a trampoline net structure after a predetermined time period controlled through a timer member to render the same inoperative.

3,635,472
SINGLE-STATION MULTIPURPOSE BODY-EXERCISING MACHINE
Walter Marcyan, 3055 Hollywell Place, Glendale, Calif.
Filed Apr. 21, 1969, Ser. No. 817,729
Int. Cl. A63b *21/06*
U.S. Cl. 272—81 **6 Claims**

An exercising machine comprising an upright supporting structure, vertical tracks associated with the upright supporting structure, a carriage which slides vertically upwardly and downwardly on the vertical tracks, a lifting arm rigidly but removably connected to the carriage at any selected one of a plurality of vertically spaced connection points, and adjustable resistance means associated with the carriage to bias the carriage and lifting arm in a vertically downward direction downward movement of the carriage being limited by stop elements.



3,635,473
TAPE CUTTER
Osamu Sasaki, Hirakata-shi, and Kiyoshi Yamakawa, Ikeda-shi, both of Japan, assignors to Sekisui Adoheya Kogya Kabushiki Kaisha, Osaka-shi, Japan
Filed Oct. 2, 1969, Ser. No. 863,283
Claims priority, application Japan, Oct. 10, 1968, 43/88234; Mar. 14, 1969, 44/19834
Int. Cl. B65h *45/22*; B26f *3/02*
U.S. Cl. 270—86 **2 Claims**

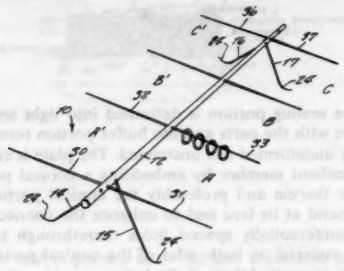


A tape cutter comprising a support and a pair of blades fixed to said support with the cutting edges thereof facing each other, said blades being spaced apart by a distance to permit the passage of a tape at their upper ends and brought closer toward each other downward into contact with each other at their lower ends.

3,635,474
HOPPING GAME APPARATUS
Zygmund Nedwick, c/o Athletic Devices, Inc., Box 161, Glen Cove, N.Y.
Filed Sept. 19, 1969, Ser. No. 860,178
Int. Cl. A63b *5/00*
U.S. Cl. 273—1 A **5 Claims**

A hopping game apparatus for children having a longitudinal semiflexible tubular bar supported at each end by a pair

of semiflexible legs with each leg having a formed foot designed to prevent the lower ends of the legs from jamming into the ground, the legs being of equal length such as to maintain the longitudinal bar horizontal. Extending laterally from each side of the longitudinal bar are a plurality of pairs of semiflexible rods that are horizontal and at right angles to the longitudinal bar. The pairs of rods are equally longitudinally spaced from each other along the length of the longitudinal bar to provide between opposed rods on each side of the longitudinal bar hopping zones, or stations, for a child,



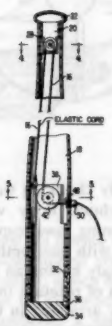
the purpose of the game apparatus being to provide and/or permit a child to hop, high-step, skip, jump, leap or twist in midair to an about face turn from one zone or station to another, from one end of the apparatus to the other, or from side to side, or along one side and back on the other side. In accordance with rules established for the game there is provided a plurality of multicolored rings that a child can move from one rod to another rod when it successfully accomplishes the desired or selected action in moving from one zone or station to another.

3,635,475

PRACTICE BAT AND BALL

Dwight C. Brown, 414 North Granada Street, Arlington, Va.

Filed Aug. 11, 1969, Ser. No. 848,999
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E **7 Claims**



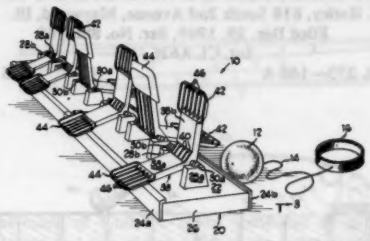
A practiced baseball bat and ball combination in which a ball is tethered to a hollow bat by an elastic cord. The elastic cord is maintained under tension by a pair of rollers mounted within the hollow bat in order to maintain a substantial length of the elastic cord within the bat whereby if the ball is struck by the bat, it will automatically return towards the bat after flight.

3,635,476

PIVOTABLE TARGET AND BALL-STRIKING MEANS

Jeffrey D. Breslow, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates

Filed Dec. 8, 1969, Ser. No. 882,907
Int. Cl. A63b *63/04*
U.S. Cl. 273—95 A **6 Claims**



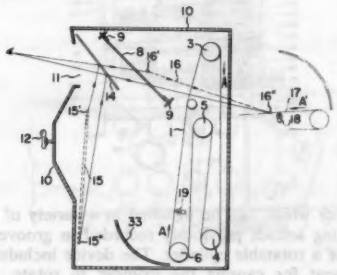
A simulated pitching or bowling game utilizing ball-like elements elastically tethered to a handle and a platform having pivoted L-shaped arms with ball-striking surfaces facing in opposite directions. Opposing players may face on opposite sides of the platform and attempt to knock all of the arms over by means of pitching or bowling the tethered ball.

3,635,477

BOMBING APPARATUS WHEREIN VIRTUAL IMAGES OF THE TRAJECTORY AND LAND APPEAR AND ARE SHOT AT WHEN ALIGNED

Shikanosuke Ochi, Tokyo, Japan, assignor to Sega Enterprises, Inc., Tokyo, Japan

Filed Mar. 30, 1970, Ser. No. 23,726
Claims priority, application Japan, Oct. 9, 1969, 44/95859
Int. Cl. F41j *9/00*
U.S. Cl. 273—101.2 **4 Claims**



A simulated bombing playing machine including a semitransparent map belt on which is depicted a target and the lay of the land. A first reflector is positioned for displaying a virtual image of the map belt to a player, and this reflector is rotatably adjusted by a player-operated control handle. The map belt is driven in a direction toward the first reflector. A trajectory reflector is disposed on the player's side of the first reflector. A trajectory displaying light source is so located that when a player depresses a trigger button switch, the light source is illuminated and its image is viewed through the trajectory reflector as moving from the player's side to far away. On the back side of the map belt are positioned a plurality of firing light sources so that one of them will flash at the point where the virtual image of the trajecto-

ry crosses with the virtual image of the lay of the land. In use, a player attempts to adjust the control handle and rotate the first reflector so that the virtual image, trajectory, as indicated by the trajectory light source, will cross the virtual image of the target. If he is successful, the firing light source will flash more brightly to indicate a bombing hit.

3,635,478

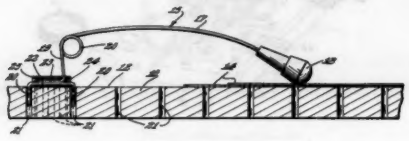
CARD GAME BOARD AND CARD-HOLDING MEANS

Fred J. Hatley, 818 South 2nd Avenue, Maywood, Ill.

Filed Dec. 29, 1969, Ser. No. 888,789

Int. Cl. A63f *1/06*

U.S. Cl. 273—148 A **6 Claims**



A card game board has a playing surface with pin-receiving sockets, and card-holding means have mounting pins removably engaged in the sockets. The holding means comprise spring arm press-down members and dead card trays.

3,635,479

SOUND REPRODUCING APPARATUS

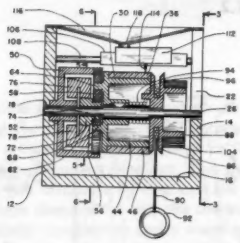
Gabriel Ramirez Osante, La Florida, Mexico, assignor to Cia Industrial de Novedades Plasticas y Metalicas, S.A.

Filed Sept. 4, 1969, Ser. No. 855,200

Claims priority, application Mexico, Sept. 21, 1968, 105993

Int. Cl. G11b *3/00, 25/02*

U.S. Cl. 274—17 **9 Claims**



A device which can be installed in a variety of toys, for reproducing sounds previously recorded in grooves on the surface of a rotatable cylinder. The device includes a drive arrangement for causing the cylinder to rotate, a clutch mechanism for limiting rotation of the cylinder to a single direction, a brake mechanism for controlling the speed of rotation of the cylinder, and a sound reproducing system for playing back a particular sound sequence recorded on the cylinder.

3,635,480

SEALED JOINT AND GASKET THEREFOR

Orville J. Bain, Culver City, and Jerry G. Jelinek, Whittier, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed June 4, 1970, Ser. No. 43,455

Int. Cl. F16j *15/08, 15/10*

U.S. Cl. 277—180 **11 Claims**

A joint and gasket in which one of a pair of parts to be sealed has a recess surrounded by a clamping face, the gasket has a resilient member to snugly fit into and fill the recess and has a metal plate embedded in the resilient member, the plate having a flat exposed portion to be clamped between the two parts. The resilient member has a relatively wide buffer portion adjacent the flat plate portion and has a sealing portion inwardly of the buffer portion. The sealing portion initially extends axially beyond the buffer portion whereby when the parts are brought together to clamp the plate, the sealing portion is deformed into tight sealing engagement with the parts and the buffer portion remains substantially undeformed and unstressed. The plate is connected to the resilient member by embedding a conical portion of the plate therein and preferably the conical portion has a reverse bend at its free end to enhance the connection and has circumferentially spaced holes therethrough to permit resilient material on both sides of the conical portion to be integrally connected through the holes.

3,635,481

CHUCK FOR MACHINE TOOLS

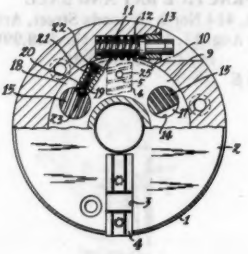
Karl Hiestand, Pfullendorf, Germany, assignor to SMW, Spanneinrichtungen, Schneider, Manz & Weisshaupt OHG, Friedrichshafen, Germany

Filed Oct. 14, 1969, Ser. No. 866,284

Claims priority, application Germany, Oct. 16, 1968, P 18 03 262.7

Int. Cl. B23b *31/16*

U.S. Cl. 279—115 **4 Claims**



A chuck for centrally chucking workpieces on a machine tool, comprising: a chuck body with radially extending grooves therein, tensioning jaws respectively received in the grooves and provided with gearteeth, a threaded spindle in the body, the chuck body having an angular cross section in planes through the axis of rotation thereof so as to confine a recess, a ring rotatably arranged in the recess and provided with teeth in meshing engagement with the threaded spindle, and a plurality of follower means mounted on the ring and provided with teeth respectively in meshing engagement with the teeth of the jaws for radially displacing the same upon rotation of the spindle.

ERRATUM

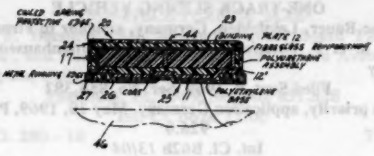
For Class 280—11 see:
Patent No. 3,635,854

3,635,482

SKI AND METHOD OF MANUFACTURE

Rudolph G. Holman, Santa Ana, Calif., assignor to AMF Incorporated

Continuation of application Ser. No. 705,706, Feb. 15, 1968, now abandoned. This application June 29, 1970, Ser. No. 56,089
Int. Cl. A63c 5/12
U.S. Cl. 280—11.13 L 24 Claims



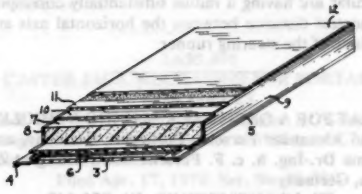
A new and improved snow ski and a method of making said ski. The ski comprises a plastic foam core surrounded by one or more fiber glass layers and a predetermined fiber glass winding. A unique top surface assembly including a coiled spring edge and a bottom surface assembly, the various embodiments of which are described hereinafter, are then mounted about the core assembly to form a finished ski.

3,635,483

ENCAPSULATED PLASTIC SNOW SKI

Richard D. Barriball, Montgomery; William T. Faris; George F. Gross, and Charles W. Walters, all of St. Peter, all of Minn., assignors to Larson Industries, Inc., Edina, Minn.

Filed Sept. 2, 1969, Ser. No. 854,544
Int. Cl. A63c 5/00
U.S. Cl. 280—11.13 L 3 Claims



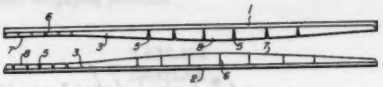
A rugged, flexible snow ski having a lightweight core (e.g., polyurethane foam) encapsulated within a shell made of a tough, resilient thermoplastic which has been reinforced with glass fibers. The ski can be manufactured by hot pressing a ski assembly which comprises a high-density polyethylene running surface, steel edges, a preformed polyurethane foam core interposed between upper and lower sheets of glass fiber reinforced thermoplastic and bounded on each side by sheets of glass fiber reinforced thermoplastic, all topped by a decorative plastic cover sheet. During the hot pressing, the four glass reinforced plastic sheets which surround the core are fused together to form a shell which encapsulates the foam core, and the entire ski assembly is firmly bonded together to form a unitized structure.

3,635,484

SKI MADE OF SYNTHETIC RESINS

Syuhei Nakamura, and Hironobu Takakamo, both of Shimodate-shi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1969, Ser. No. 865,903
Claims priority, application Japan, Oct. 16, 1968, 43/89738
Int. Cl. A63c 5/12
U.S. Cl. 280—11.13 L 7 Claims



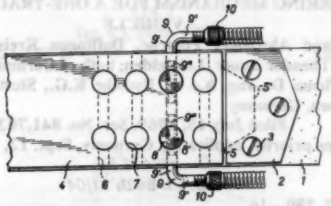
A ski made of synthetic resins composed of upper and lower plates and side plates defining the outer shape of the ski, wherein the upper and lower plates are provided with a plurality of longitudinal ribs at the inner surfaces thereof each having a cross section of a series of projection adapted to mesh with each other provided on the opposing plate, said ribs being provided with such incisions therealong that allow bending of the upper or lower plate without restriction due to the ribs, and the ribs of the upper and lower plates are bonded together to form originally curved ribs while the upper and lower plates are shaped to a required profile in a mold under a heated and compressed condition.

3,635,485

ADJUSTING DEVICE FOR A SKI-BINDING

Ernst Gertsch, Sporthaus Central, Wengen, and Ulrich Gertsch, 461 G, Aenderbergstrasse Matten, Interlaken, both of Switzerland

Filed Oct. 31, 1969, Ser. No. 872,905
Claims priority, application Switzerland, Nov. 7, 1968, 16606/68
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 C 4 Claims



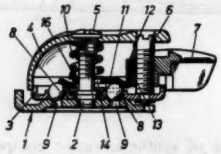
An adjusting device for a ski-binding is used to adapt the binding to the different sizes of the ski-boots, for example to adjust a heel locking device, or a release plate or a pair of sole holding jaws. The device comprises two parts which are adjustable one relative to the other. One of these parts has one or two plug members which are guided in smooth bores of the other part. The plug members are provided with a threaded portion engaging a screwnut which is maintained against displacement longitudinally of the plug member in a recess provided in said other part. Adjustment between said two parts is effected either by turning the plug member engaging the stationary nut or by turning the nut to displace the plug member.

3,635,486

SAFETY TOE IRON FOR SKI BINDINGS

Ernst-Richard Schriewer, Garmisch-Partenkirchen, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed Feb. 5, 1970, Ser. No. 8,974
Claims priority, application Germany, Feb. 10, 1969, P 19 06 569.1
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **3 Claims**



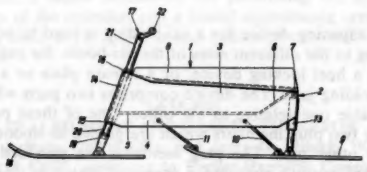
The toe iron is laterally pivotally movable in response to an excessive torque and comprises a pivoted member, which is pivoted on a pivot pin, which is firmly connected to the ski and extends at right angles to the surfaces of the ski, and a soleholder, which is pivoted to the pivoted member by means of a second pivot pin, which is at right angles to the surface of the ski. The toe iron also comprises at least one ball detent device, which is biased by spring pressure and disposed between the pivoted member and a baseplate, which is fixed to the ski. The pivoted member comprises a bipartite housing, containing in its interior a prestressed spring element which acts on the detent ball or balls and on the soleholder. The spring element consists of a helical compression spring, which in known manner bears on a sheet metal abutment. The sheet metal abutment has a vertical flange, which lies opposite to the soleholder and extends transversely to the longitudinal direction of the housing, and the sheet metal abutment is movable in the vertical direction and in the longitudinal direction of the housing and has a runup ramp for each detent ball.

3,635,487

STEERING MECHANISM FOR A ONE-TRACK SLIDE VEHICLE

Ferdinand Alexander Porsche, Doffingen Kreis Boblingen, and Theodor Bauer, Leinfelden, both of Germany, assignors to Firma Dr.-Ing. h.c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed July 15, 1969, Ser. No. 841,703
Claims priority, application Germany, Sept. 12, 1968, P 17 80 412.5
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **15 Claims**



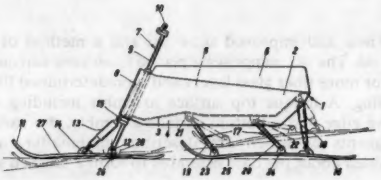
A one-track slide vehicle with a supporting frame to which a rear runner and a steering mechanism with a front runner are attached. The steering mechanism includes a steering column and a handlebar which cooperate with each other by means of a detachable sleeve which has screw threads between the sleeve and the steering column and also between the sleeve and the handlebar, respectively. The screw threads between the sleeve and the steering column have a right-hand thread while the screw threads between the sleeve and the handlebar have a left-hand thread; the sleeve is scored on the outer surface so as to provide a good gripping surface for easy manipulation thereof.

3,635,488

ONE-TRACK SLIDING VEHICLE

Theodor Bauer, Leinfelden, Germany, assignor to Firma Dr.-Ing. h. c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Sept. 9, 1969, Ser. No. 856,382
Claims priority, application Germany, May 10, 1969, P 19 23 926.0
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **14 Claims**



A one-track sliding vehicle or sled having a supporting frame, a steering mechanism rotatably mounted at the supporting frame, and a steering runner hingedly mounted about the horizontal axis on the steering mechanism. A sliding runner is also connected with the supporting frame by means of a bilaterally effective spring element, and guide means are provided which, together with the supporting frame and sliding runner, are approximately in the form of a parallelogram. The sliding runner and its corresponding sliding plane are mounted so that, in any operating position, they are oriented toward a base point located in the zone of the steering runner on a circular arc having a radius substantially corresponding to the shortest distance between the horizontal axis and the sliding plane of the steering runner.

3,635,489

SEAT FOR A ONE-TRACK SLIDING VEHICLE

Ferdinand Alexander Porsche, Doffingen, Germany, assignor to Firma Dr.-Ing. h. c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Sept. 9, 1969, Ser. No. 856,442
Claims priority, application Germany, May 17, 1969, P 19 25 206.3
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **8 Claims**

A one-track sliding vehicle or sled having a supporting frame, a steering mechanism, a front steering runner and a

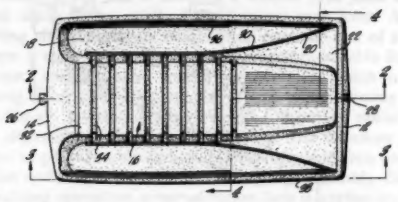
rear sliding runner. The sled is also provided with a passenger seat which can either be hingedly mounted to the supporting frame or detachably connected to the supporting frame. Further, the seat is useful for storing equipment articles of the driver and/or of the sled itself. For example, the steering mechanism, which can be constructed so as to be detachable from the supporting frame, can be accommodated in recesses provided in the undersurface of the seat and held in that position under tension.

3,635,490

ONE-PIECE PLASTIC SLED

John E. Demaree, 516 Monterey Road, South Pasadena, Calif., and Michael S. Demaree, 5248 Shearin Avenue, Los Angeles, Calif.

Filed Aug. 21, 1969, Ser. No. 851,828
Int. Cl. B62d *13/06*
U.S. Cl. 280—18 **7 Claims**



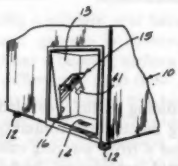
A snowsled molded of one piece of a plastic material wherein the runners are so designed as to accommodate various types of snow conditions. The surfaces of the runners are provided with secondary ribs so that when someone is seated upon the sled, it will cause the runners to tilt outwardly so that it will run upon this secondary runner if the snow conditions are hard. Under softer snow conditions, the runners are forced inwardly so that the sled runs upon the larger flat portions of the running surfaces thereby providing a larger running surface so that the sled stays higher up in the snow. By this tilting action together with the configuration of the runners, the sled thus presents the best running surface automatically no matter what the snow conditions are. In addition, the runners are curved so as to permit the sled to be easily maneuvered.

3,635,491

CASTER JACK MECHANISM FOR PORTABLE APPLIANCES

Reinhold Drews, Stevensville, and Julius J. Grau, Berrien Springs, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 17, 1970, Ser. No. 29,389
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.14 **5 Claims**



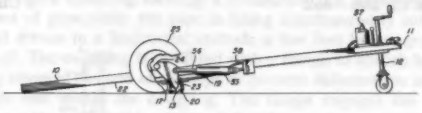
A caster jack mechanism for use with heavy appliances such as washing machines and the like employing a pair of shafts pivotally mounted to the cabinet of the appliance and provided with drive means for transmitting rotational motion from one shaft to the other. A plurality of casters are supported in spaced relation along the two shafts such that pivotal movement of the shafts in one direction causes the casters to be pivoted into cabinet-supporting relationship so that the entire weight of the cabinet is supported by the casters and the cabinet can be freely moved in this position. The actuating mechanism includes a pedal assembly mechanically coupled to one of the shafts and being provided with a spring-biased latch mechanism for holding the casters in their floor-engaging position.

3,635,492

TRAILER

Louis D. Mauldin, 2308 Grand Avenue, Phoenix, Ariz.

Filed Dec. 5, 1969, Ser. No. 882,527
Int. Cl. B60p *3/10*
U.S. Cl. 280—43.23 **1 Claim**



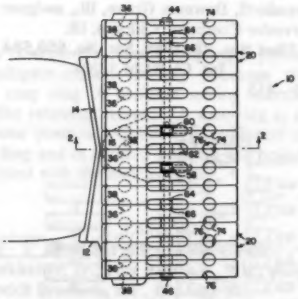
A trailer having a hydraulically operated mechanism for elevating and lowering the frame of the trailer. A unique offset rotatable axle is operable to move the frame from the normal substantially horizontal travel position to a position in which the rear portion of the frame is lowered for ease of loading or unloading.

3,635,493

TRACTOR FRONT-END WEIGHT ASSEMBLY

Hubert Barth, Mannheim, and Klaus Hauk, Altrip, Ludwigshafen, both of Germany, assignors to Deere & Company, Moline, Ill.

Filed Aug. 7, 1970, Ser. No. 61,991
Claims priority, application Germany, Aug. 14, 1969, P 19 41 316.2
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 E **16 Claims**



A barlike base weight is fixed crosswise to the forward end of a tractor and includes a transverse, upturned lip over which hook-shaped portions of two or more identical plate-

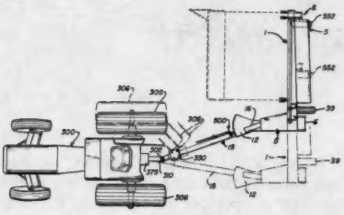
shaped weights may be engaged. The mounted weights are disposed in side-to-side abutting relationship, and are centered transversely and kept from shifting sideways on the base weight by a centering pin. The weights are held tightly against each other and fixed in relation to the centering pin by a pair of clamping screws respectively inserted, from the opposite sides of the mounted weights, through upper and lower transversely aligned bores. The base weight includes a first hitch connection which may be used when none of the plate-shaped weights are mounted on the base weight, and a second hitch connection is provided by cooperating portions of the weights when they are mounted on the base weight.

3,635,494

DIAL HITCH LOCK FOR SWINGABLE TRAILER TONGUE

Reynold Barkstrom, Hinsdale, and Peter J. Peacock, Western Springs, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 5, 1970, Ser. No. 9,021
Int. Cl. B60d *1/00*
U.S. Cl. 280—462 **6 Claims**



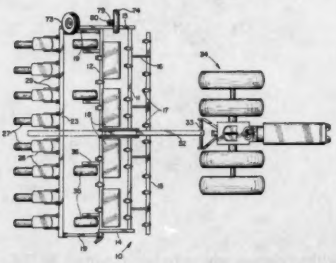
A locking device for the tongue of a harvester which is pivoted at its rear end to a draft frame of the harvester for swinging movement about a vertical axis. The frame having an arcuate flange struck from the axis and overlying the tongue and having horizontal angularly spaced holes therein, a spring-loaded bolt on the tongue connected to an operating lever having a roller at one end engaging a bolt-mounting flange on the tongue to provide a fulcrum for the bolt. The lever is attached at its other end to a rope which leads to the operator's station for easy reach by the operator. The bolt is movable by the lever to withdraw from any of the openings in the flange and is spring urged into the opening selected after the operator has angled the tongue with respect to the harvester as desired.

3,635,495

TELESCOPING IMPLEMENT TONGUE

John W. Orendorff, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 28, 1969, Ser. No. 880,584
Int. Cl. B62d *53/00*
U.S. Cl. 280—415 **2 Claims**



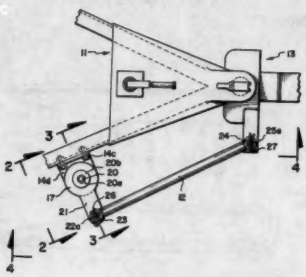
A transversely elongated trailing implement adapted to be endwise transported to reduce its width has an operating draft tongue which projects forwardly from the implement frame for connection to a tractor and has a sliding association with the implement frame allowing the tongue to be telescoped rearwardly to a storage position within the front and rear confines of the frame when the implement is to be endwise transported.

3,635,496

SWAY CONTROL UNIT

Edward B. Hedgepeth, Salt Lake City, Utah, assignor to Clifton E. Hedgepeth; Royce Doyle Hedgepeth and Jetta V. Vincent, all of Salt Lake City, Utah, part interest to each

Filed Oct. 8, 1969, Ser. No. 864,604
Int. Cl. B60d *1/00*
U.S. Cl. 280—446 B **8 Claims**



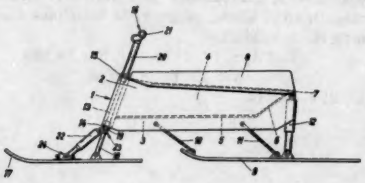
A sway control unit to be linked between a towing vehicle and a towed vehicle and providing a rotary frictional resistance to lateral weaving or swaying of the towed vehicle with respect to the towing vehicle, without adversely affecting free vertical or necessary horizontal angular displacement of the vehicles relative to one another.

3,635,497

STEERING RUNNER OF A ONE-TRACK SLIDING VEHICLE

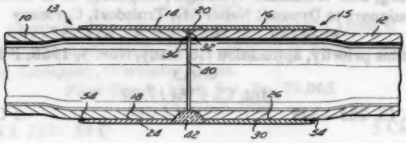
Ferdinand Alexander Porsche, Doffingen, and Theodor Bauer, Leinfelden, both of Germany, assignors to Firma Dr.-Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Sept. 9, 1969, Ser. No. 856,319
Claims priority, application Germany, Oct. 23, 1968, P 18 04 581.3
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **24 Claims**



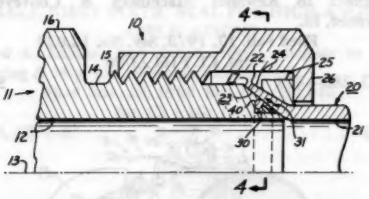
A one-track sliding vehicle or sled having a supporting frame, a steering mechanism rotatably mounted at the supporting frame and a front steering runner and a rear runner connected at said supporting frame. The front steering runner is supported at the steering mechanism or at the supporting frame itself by a spring or shock-absorber leg which is adjustably mounted, thereby allowing the steering runner to be optimally adjusted to the particular driving conditions such as, for example, deep snow

3,635,498
WELD FITTING
Hiralal V. Patel, Cleveland, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed Dec. 15, 1969, Ser. No. 885,018
Int. Cl. F16l 13/02
U.S. Cl. 285—24 10 Claims



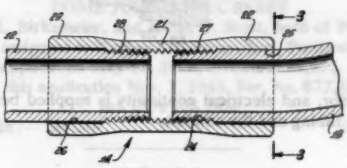
A coupling for use in forming a welded tube joint is disclosed along with a method for forming such joint. A thin coupling sleeve is tightly swage-fitted onto the end of a tube to form a male or female tube end assembly suitable for engagement with a tubular mating part assembly which may be a fitting or another coupling sleeve and tube assembly. The male-female interlocking arrangement provides radial and axial alignment of the joined assemblies. The structure is arranged to provide a space between the tube end face and the interior end face of the tubular mating part assembly. During the welding operation, external fusion heat is applied to form a single weld bead extending from the interior of the tube to the exterior surfaces of the assemblies. The width of the weld at its inner radial extremities is longer than the axial width of the space between the interior end faces and its width at its outer radial extremities is at least equal to twice the axial length of the male-female telescoped portion so that all the members are fused into a single unitary structure.

3,635,499
LIP SEAL
Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.
Filed Feb. 24, 1969, Ser. No. 801,664
Int. Cl. F16l 17/00
U.S. Cl. 285—111 3 Claims



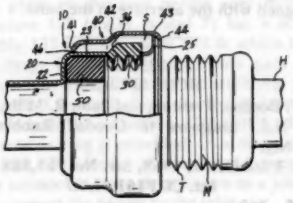
A lip seal for making a gastight seal between two abutting surfaces. A peripheral groove is formed in one of the abutting surfaces and has a bearing surface facing toward the direction of positive differential fluid flow. A backing lip surface forms a reentrant lip between the bearing surface and the respective abutment surface, and a relief surface joins the bearing surface to the abutment surface. A ring seal has a pair of legs joined by a central bight, one of the legs and the bight having a surface which matches and bears against the bearing surface and the backing lip surface, the other leg carrying a sealing surface and projecting beyond the groove so as to make a deflectible and fluidtight resilient seal with the opposite abutment surface.

3,635,500
UNDERGROUND DRIVE COUPLING
Edward J. Kirby, Manhattan Beach, Calif., assignor to Torrance Tubing Division of Cyprus Mines Corporation, Torrance, Calif.
Filed Apr. 3, 1970, Ser. No. 25,380
Int. Cl. F16l 21/00
U.S. Cl. 285—115 3 Claims



A drive coupling forming a connection for adjacent sections of pipe while the pipe is being simultaneously rotated and driven in a horizontal attitude a few feet below ground level. The coupling is provided with a flange to absorb bending stress at the end of the pipe to prevent deformation of the pipe end within the coupling. The flange engages the pipe where the pipe wall is unthreaded and at maximum thickness.

3,635,501
QUICK CONNECT-DISCONNECT HOSE COUPLING
Thomas Thorne-Thomsen, Godrey, Ill., assignor to Olin Mathieson Chemical Corporation
Continuation of application Ser. No. 662,533, Aug. 22, 1967, now abandoned. This application Nov. 14, 1969, Ser. No. 871,614
Int. Cl. F16l 35/00
U.S. Cl. 285—34 6 Claims

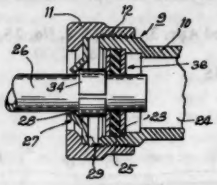


A quick connect-disconnect coupling is provided comprising an adaptor-retainer having openings therein which receive a snap ring. A resilient sealing member is held in place by the retaining adaptor. A cam-ring is also provided which in one position will allow introduction of a standard male coupling and in another position will hold the snap ring in engagement with the male coupling.

3,635,502
QUICK PIPE CONNECTOR
Robert Burkhalter, Jr., Fort Atkinson, Wis., assignor to Morton-Norwich Products, Inc., Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,377
Int. Cl. F16l 55/00
U.S. Cl. 285—177 4 Claims

This disclosure relates to a pipe and tubing connector adapted to quickly and easily connect unthreaded pipe to a hollow body with a fluidtight seal, in which a variety of dif-

ferent pipe and tubing sizes may be accommodated. The pipe or tubing is tightly clamped to resist withdrawal from the



connector, and electrical continuity is supplied between the pipe or tubing and the conduit.

3,635,503

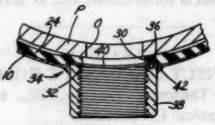
BAND CLAMP WITH SERVICE OUTLET

Michael J. Rafalski, Jr., 602 S. Falcon St., assignor to Blase G. Celmer, 506 Koszciuszko St., both of South Bend, Ind.

Filed Dec. 23, 1969, Ser. No. 887,639

Int. Cl. F16l *41/02*

U.S. Cl. 285—197 **6 Claims**



A service outlet is provided in a flexible band clamp by forming an aperture through the band. The band is inwardly depressed around the aperture and a threaded fitting is disposed in the recess formed by the depression and welded therein. The gasket of the clamp also is provided with an aperture aligned with the aperture in the band.

3,635,504

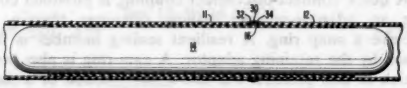
HOSE SPLICE

Clarence W. Borden, Trenton, and John R. Mills, Pennington, both of N.J., assignors to Goodall Rubber Company, Trenton, N.J.

Filed Oct. 7, 1968, Ser. No. 765,588

Int. Cl. F16l *31/00*

U.S. Cl. 285—260 **7 Claims**



Two-hose sections are spliced together by cutting their ends diagonally; telescoping them over a fabric-reinforced uncured rubber sleeve; placing uncured rubber against the sleeve to fill a gap between the hose sections; bridging between the outer surfaces of the hose sections with a strip of uncured rubber; and, curing the uncured rubber elements while applying compressive forces thereto.

Preparatory cutting of the hose sections is guided by a template which also flattens the hose. The internal sleeve is formed on a mandrel which remains within the sleeve until it is ejected therefrom by fluid pressure at the completion of the splicing operation

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3,635,505

PLUG CONNECTION FOR PIPES WITH EXTERNAL HELICALLY SHAPED RIBS, BEADS, OR THE LIKE

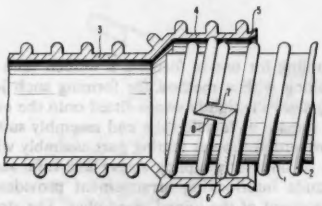
Gerhard Osterhagen, Driesch; Friedhelm Krebsbach, Siegburg, and Waldemar Wissinger, Siegburg, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Oct. 29, 1969, Ser. No. 872,287

Claims priority, application Germany, Nov. 9, 1968, P 18 08 056.3

Int. Cl. F16l *17/00*

U.S. Cl. 285—345 **46 Claims**



A plug connection for pipe with ribs, beads or the like, formed on the outside of a pipe member in a single-thread or multiple-thread fashion, with at least one annular sealing element disposed between the inserted pipe end and the overlapping pipe end or socket. The sealing element has a right-angled stepped shoulder having a dimension corresponding to the pitch. The stepped shoulder of the sealing element passes through a number of ribs corresponding to the number of threads. The ribs can be provided with grooves for the insertion of the sealing element; the sealing element can have a hollow cross section as well as having a shape, as viewed in cross section, of a semicircular external surface or a triangle with the tip thereof pointing outwardly.

3,635,506

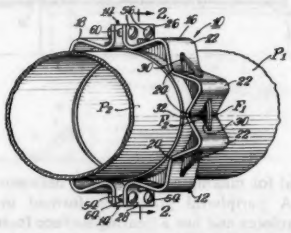
CLAMP FOR COUPLING PIPES

George E. Womble, and James L. Suhr, both of Kewanee, Ill., assignors to Kewanee Machinery & Conveyor Co., Kewanee, Ill.

Filed Feb. 17, 1970, Ser. No. 12,029

Int. Cl. F16l *23/00*

U.S. Cl. 285—411 **5 Claims**



A clamp for coupling together two abutting end flanges of two pipes comprising a joint band fastened about the periphery of the two flanges by a tightening device. The joint band has two semicircular band segments that are identical in construction and mate together.

Each band segment has a corrugated configuration consisting of an alternate series of ridges and grooves between its out-turned ends. In each groove is symmetrically formed a double-keyhole slot having a curved middle portion and two

diverging straight end portions. The straight end portions have parallel sides which are spaced apart a distance slightly greater than the combined thickness of the flanges to provide a snug fit thereon.

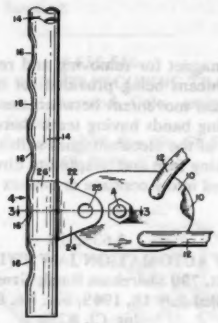
The tightening device comprising two fastener means which tighten together the mating ends of the band segments after they have been snugly fitted over the outer edges of the two flanges.

3,635,507

ADJUSTABLE SUPPORT FOR CYCLE SADDLE

Martin J. Bird, Norwalk, Ohio, assignor to Persons-Majestic Mfg. Company, Worcester, Mass.

Filed Oct. 8, 1970, Ser. No. 79,065
Int. Cl. F16b *7/00*
U.S. Cl. 287—54 C **5 Claims**



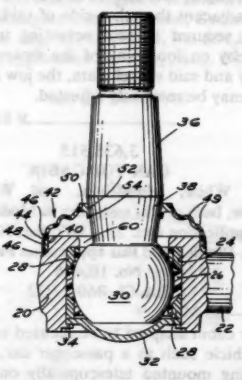
An adjustable support for cycle saddles which comprises an elongated member to be connected at one end thereof, to the end plate or axle of the rear wheel of the cycle, the member extending upwardly for connection to the saddle at the rear portion thereof and having a series of holes, a one-piece clamping bracket for the member adapted to be bolted to its respective end plate, said bracket including an integral locking key in the form of a bent over tang entering into a selected hole in the respective member of the support and being self-locking thereto when connected to the end plate or axle.

3,635,508

BALL JOINT STATIC SEAL FOR HIGH-ANGLE APPLICATIONS

Edward A. Snidar, Ann Arbor, Mich., assignor to O & S Bearing & Mfg. Co., Whitmore Lake, Mich.

Filed Nov. 28, 1969, Ser. No. 880,645
Int. Cl. F16c *11/06*
U.S. Cl. 287—87 **2 Claims**



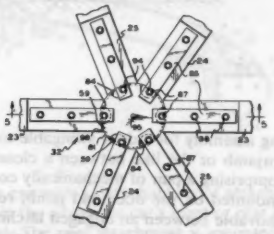
A flexible, cuplike seal for a ball joint having the larger rim adapted to surround and be secured to the outer surface of a ball joint socket and the central aperture therein in the base of the cup surrounding the stud of the ball element, the central opening having an axially extending wall directed to the ball in assembly to prevent movement of the dust seal into the area where it might be pinched in high-angle motion of the ball and stud relative to the ball socket. The walls of the seal are provided with undulations to facilitate the stretching and collapsing which results from the motion of the joint.

3,635,509

DOME JOINT STRUCTURES

George R. Birkemeier, and Hollis C. Scott, both of Portland, Oreg., assignors to Timber Structures, Inc., Portland, Oreg.

Original application May 17, 1968, Ser. No. 729,952. Divided and this application Nov. 3, 1969, Ser. No. 873,254
Int. Cl. F16b *7/04*
U.S. Cl. 287—189.36C **6 Claims**



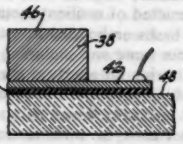
A dome structure 20 (FIGS. 1 to 5) includes beams connected together in triangles by joints 31 and 32 and connected to a tension ring by joints 34. In each joint 31, bolts pass through straps connected to the beams and pass through clearance notches in stiffener plates welded to a tube and pass through and bear laterally against the inner periphery of the tube. Each joint 34 is similarly connected to the beams, has a vertical plate 63 connected to a tension ring and a base plate splined for radial movement only relative to the supporting wall. Low friction facings on the base plate and a supporting plate on the wall permit easy radial sliding. A dome structure 120 (FIGS. 6 and 7) has a double tension ring assembly 131 and has joints 134 in which bolts connect the beam straps to stiffening plates and pass through and bear against close-fitting holes in the stiffening plates, which holes are spaced inwardly from the inside faces of tubes of the joints. In a dome structure 220 (FIGS. 8 and 10), a laminated tension ring is provided. In a dome structure 320 (FIGS. 11 and 12) a series of straps welded together in the same plane connect at least three beams to a joint, and shear plates also connect the beams to the joint.

3,635,510

HEAT SEAL OF A GLASS MEMBER TO ANOTHER MEMBER

Arthur Irwin Stoller, North Brunswick, and William Henry Schilp, Jr., Flemington, both of N.J., assignors to RCA Corporation

Filed Nov. 20, 1969, Ser. No. 878,511
Int. Cl. C03c *17/30, 17/00*
U.S. Cl. 287—189.365 **2 Claims**



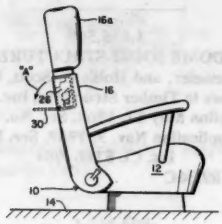
The metal or semiconductor member is provided with a coating of silicon nitride and heat sealed to a glass member. The silicon nitride coating is readily wet by hot glass to form a rugged, vacuumtight seal.

3,635,511

LATCHING ASSEMBLY WITH MAGNETIC LOCKING

Henry A. Waller, Los Angeles, Calif., assignor to Consolidated Controls Corporation, Bethel, Conn.

Filed Nov. 5, 1969, Ser. No. 874,134
Int. Cl. E05c *3/02, 17/56*
U.S. Cl. 292—251.5 13 Claims



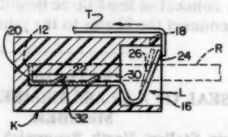
A latching assembly for a door swingable toward and away from a doorjamb or the like between a closed and an open position, comprising a pair of mechanically cooperating latch members mounted on the door and jamb, respectively, and relatively movable between an engaged latching position and a disengaged unlatched position. The latch members have latching surfaces adapted for engaged contact in a first direction generally transversely of the direction of movement of an adjacent portion of said door relative to the doorjamb. Permanent magnet holding means is provided for normally locking said latch members in latched contact, and electromagnetic means is provided for producing a magnetic force with a polarity opposing that of said permanent magnet means to unlock and relatively move the latch members out of latched engagement thereby permitting the door to be opened.

3,635,512

LOCK FOR KNOBS AND THE LIKE

Wray Carl Hansen, 8755 West 73rd Place, Arvada, Colo.

Filed June 22, 1970, Ser. No. 48,068
Int. Cl. E05b *3/04*
U.S. Cl. 292—353 10 Claims



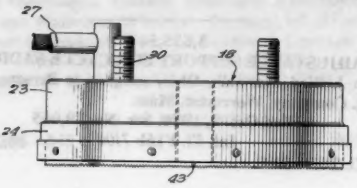
A lock for releasably securing a pushbutton, knob or the like to an actuator, such as a rod or shaft, comprising a member constructed of resilient metallic sheet material having prongs or barbs embedded into the knob for preventing its removal from same and including a resilient cantilevered locking lever having an aperture therein through which the rod extends which jams and frictionally engages the rod but which may be manually flexed to a release position. The increasing embedment or indentation of the knob by the prongs, with time and wear, is ineffective to change the resilient urge of the lever from its initial position of assembly, thereby maintaining the locking effect unchanged.

3,635,513

ELECTROMAGNET FOR MAGNETIZABLE MEMBERS

Ralph W. Edwards, 13245 Gremoor Drive, Elm Grove, Wis.

Filed Oct. 29, 1969, Ser. No. 872,125
Int. Cl. B66c *1/06*
U.S. Cl. 294—65.5 3 Claims



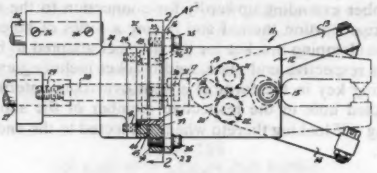
An electromagnet for removing and replacing magnetizable lids with means being provided for minimizing the tendency for lateral movement between the electromagnet and the lid including bands having teeth thereon disposed about the periphery of the electromagnet with the teeth projecting from the working face and adapted to directly engage the lid whether warped into a concave or convex configuration.

3,635,514

DUAL GRIP AUTOMATION JAW SWIVEL ASSEMBLY

Leland F. Blatt, 790 Shoreham Road, Grosse Pointe, Mich.

Filed July 18, 1969, Ser. No. 843,077
Int. Cl. B25b
U.S. Cl. 294—106 1 Claim



In combination with an automation duel grip jaw assembly having an apertured mounting flange, and a power operated actuating unit for said jaw assembly with an apertured jaw-mounting flange, a jaw swivel assembly including an apertured swivel plate secured to said jaw assembly mounting flange and a swivel body loosely mounted through and retainingly engaging one side of said swivel plate and including a collar adjacent the other side of said swivel plate, said collar being secured to said actuating unit jaw-mounting flange whereby on loosening of the fasteners between said jaw assembly and said swivel plate, the jaw assembly and said swivel plate may be rotatively adjusted.

3,635,515

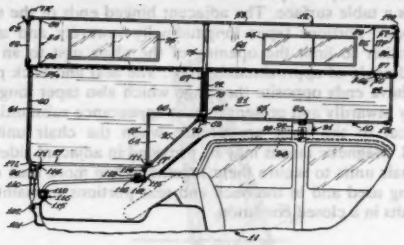
CAR TOP CABIN

George H. White, Mundelein, and William J. Dunn, Libertyville, both of Ill., assignors to Moday, Inc.

Original application Oct. 25, 1967, Ser. No. 678,066, now abandoned. Divided and this application Feb. 11, 1970, Ser. No. 10,476
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC 1 Claim

A traveler cabin adapted to be secured to the top of an automotive vehicle such as a passenger car, and including an upper housing mounted telescopically on a lower housing

and movable between an upper position for use and a lower position for travel, the housings being constructed of self-



reinforced panels and having means for guiding the movement of the upper housing.

3,635,516

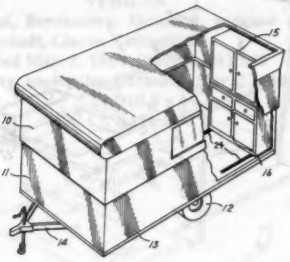
FIXTURES FOR TELESCOPING TRAILERS

Donald V. Commans, Lakewood, Colo., assignor to Jo Bud, Inc., Lakewood, Colo.

Filed July 30, 1970, Ser. No. 59,533

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 **4 Claims**



Interior fixtures for use in height-telescoping trailers includes a full-length cabinet. The cabinet is formed in two sections with the lower section track-mounted for selective positioning away from underneath the upper section. The lower cabinet presents a work surface and may hold heavy articles. A folding table is also provided. The folding table may selectively be used as a table or stowed at the table bench ends, providing a large cleared area.

3,635,517

INSTALLATION FOR REDUCING THE SOILING OF REAR LIGHTS IN MOTOR VEHICLE BODIES

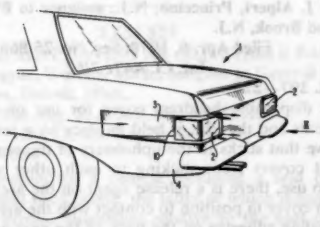
Karl Wilfert, Gerlingen-Waldstadt, and Hans Gotz, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 21, 1969, Ser. No. 851,842

Claims priority, application Germany, Aug. 24, 1968, P 17 80 278.7

Int. Cl. B60q *1/00*

U.S. Cl. 296—28 R **17 Claims**



An installation for reducing the soiling of the rear lights in motor vehicles in which the rear lights are mounted in body recesses in such a manner that air-guide channels are formed between the walls of the recesses and the walls of the rear lights facing the walls of the recesses.

3,635,518

MOUNTING OF A ROOF ATTACHMENT IN THE FRONT OR REAR SPACE

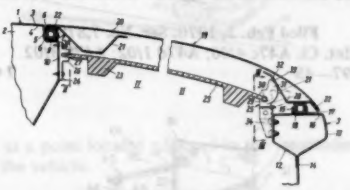
Georg Eger, Pleidelsheim, Germany, assignor to Dr.-Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Nov. 10, 1969, Ser. No. 875,111

Claims priority, application Germany, Nov. 22, 1968, P 18 10 253.9

Int. Cl. B60j *7/10*

U.S. Cl. 296—76 **14 Claims**



A passenger car with a detachable roof attachment which can be stored in the passenger car's front or rear space closeable by a hood. The roof attachment is mounted by devices arranged on oppositely disposed transverse fixed walls of the passenger car superstructure; the transverse walls define the front or rear space of the passenger car. The devices are provided with bearing sections for surrounding the rims of the roof attachment in a tonglike or clamplike manner. At least one of the devices is provided with an elastic section which makes possible the opening of the bearing section and a widened portion with a cam which rests against an inner portion of the hood to prevent undesired release of the roof attachment from the devices.

3,635,519

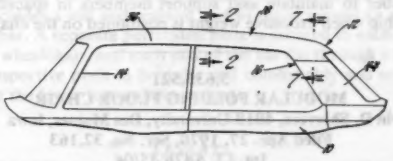
VEHICLE BODY ROOF STRUCTURE

Laverne H. Foster, Detroit; Robert M. Fox, Warren, and Charles H. Webber, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1970, Ser. No. 63,094

Int. Cl. B60j *7/10*

U.S. Cl. 296—137 R **7 Claims**



A vehicle body roof structure includes inner and outer roof panels generally coextensive in size. The longitudinal edges of the outer panel are hem flanged over like edges of the inner panel. The lateral edges of the panels are provided with mating pinchweld flanges welded to each other. The central portion of the inner panel is located immediately adjacent a like portion of the outer panel and secured thereto by a plurality of adhesive drops. The lateral and longitudinal marginal portions bounding the central portion of the inner panel and like portions of the outer panel provide the side rail and header structures. Such marginal portions are spaced a greater distance from each other than are the central portions. The inner panel is provided with longitudinally spaced rows of laterally aligned openings for receiving listing wire mounting clips. Certain of the openings and the front lateral

marginal portion are provided with outwardly embossed dams to limit flow of the uncured adhesive with respect to such openings and marginal portion during shipment of the resultant structure after assembly. The inner panel is further provided with perforations to allow for sound absorption in the space between the inner and outer panels. One or more embossed ribs may be provided in the inner panel, and a center embossment of the inner panel supports a pad of sound absorbing material in engagement with the outer panel.

3,635,520

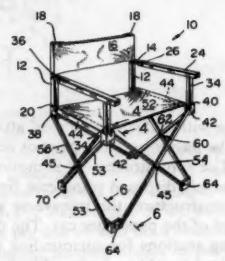
COLLAPSIBLE CHAIR

Arnold L. Roher, 933 Dana Avenue, Valley Stream, N.Y.; Arthur Sprigman, 95-20 222nd Street, Queens Village, N.Y., and Bertram Steinberg, 589 Green Place, Woodmere, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,870

Int. Cl. A47c *4/00*; A47d *1/02*; A47b *3/02*

U.S. Cl. 297—45 **7 Claims**



The invention resides in a collapsible chair which is adapted to fold into an elongated rectangular package, the chair being collapsible in two dimensions, simultaneously. A pair of upright rigid support members are connected to a foldable arm at the center thereof. A plurality of rigid support legs are collapsible in a scissor action which supports the center or weight support material. A seat brace is connectable from the lower portion of the rigid support members to interlock with a connector plate disposed on the lower end of a front brace, when the chair is opened to its stable position. The connecting of said seat brace to said plate provides the locking means for holding the chair in its stable condition and further provides the necessary rigid crossmember construction to support the body of the user. A foldable member is connected between the lower portions of the rigid support member to maintain said support members in spaced relationship when excessive weight is positioned on the chair.

3,635,521

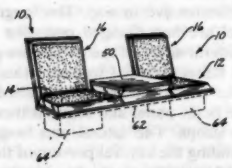
MODULAR FOLDING FLOOR CHAIR

Melvin D. Shivvers, 4018 University, Des Moines, Iowa

Filed Apr. 27, 1970, Ser. No. 32,163

Int. Cl. A47b *85/04*

U.S. Cl. 297—125 **7 Claims**



A modular folding floor chair including seat and back portions substantially identical in shape and appearance. Chair units may be used alone or in combination and may be placed on the floor or on a supporting standard. Each of the chair units may be opened or closed and when closed function as a table surface. The adjacent hinged ends of the seat and back portions taper longitudinally inwardly and abut each other to limit the opening of the chair unit to an included angle of approximately 105°. The seat and back portions have ends opposite the hinge which also taper longitudinally inwardly and present a front appearance substantially identical to the back appearance when the chair unit is closed. Magnetic means may be provided in adjacent sides of the chair units to secure them together when more than one is being used and in the back and seat portions to maintain the units in a closed condition.

3,635,522

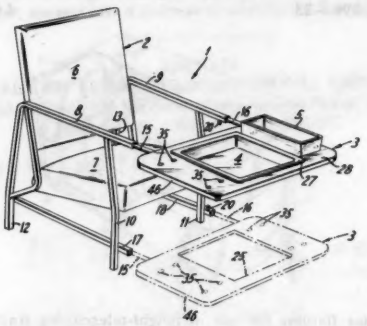
SURGICAL TREATMENT METHOD AND APPARATUS

Malcolm Kerwit, Fair Lawn, N.J., assignor to Kerwit Medical Products, Inc., Fair Lawn, N.J.

Filed Sept. 29, 1969, Ser. No. 861,660

Int. Cl. A47b *39/02*; A47c *13/00*; A47b *9/00*

U.S. Cl. 297—153 **6 Claims**



A chair is provided with an upper and lower pair of parallel, horizontally aligned, equispaced, bracket members which are secured to the chair armrests and legs, respectively, and are adapted to receive and releasably lockably secure a surgical treatment tray immediately forwardly of the chair as an integral part thereof. The surgical treatment tray removably holds a solution basin centrally thereof and also removably holds a suitable instrument tray on either side of the basin. A generally frontal anatomical wound is treated upon seating the patient in the chair, lockably securing the treatment tray to the occupied chair in the upper or lower position, and removably securing a surgical instrument tray to the treatment tray, advantageously on the side thereof opposite that of the wound being treated.

3,635,523

DISPOSABLE HEADREST COVER

Robert J. Alpert, Princeton, N.J., assignor to Blessings, Inc., Bound Brook, N.J.

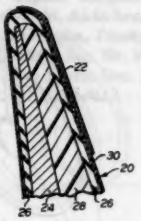
Filed Apr. 6, 1970, Ser. No. 25,865

Int. Cl. A47c *7/62*

U.S. Cl. 297—220 **8 Claims**

This disposable headrest cover for use on airplanes, or train seats and the like, is held in place by a pressure-sealing adhesive that sticks to the upholstery of the seat. In order to prevent covers from sticking to each other when stacked prior to use, there is a release agent on the area of the front of each cover in position to contact with the area of the pressure-sealing adhesive on the back of the next adjacent cover

in the stack. This eliminates the necessity of having a release strip over the pressure-sealing adhesive area and does away



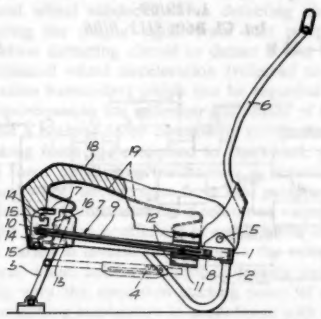
with the inconvenience of having to strip each cover before using it and having to collect the release strips for disposal.

3,635,524

ADJUSTABLE SEAT ESPECIALLY FOR A MOTOR VEHICLE

Eberhard Faust, Bernhausen, Germany, assignor to Recaro Aktiengesellschaft, Glarus, Switzerland

Filed Mar. 3, 1969, Ser. No. 803,576
Claims priority, application Germany, Mar. 13, 1968, P 17 53 010.8
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **5 Claims**



A seat which is adjustable longitudinally to different positions relative to the backrest so as to vary the depth of the seat, and which is also vertically adjustable near its front and rear ends so as to vary its height from the floor and also its inclination in the direction of travel.

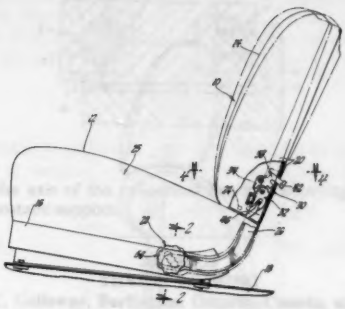
3,635,525

VEHICLE SEAT HAVING AN ADJUSTABLE BACK

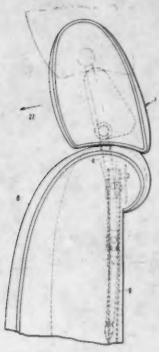
Joseph J. Magyar, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1969, Ser. No. 852,595
Int. Cl. A47c *3/00*; B60n *1/02*
U.S. Cl. 297—354 **7 Claims**

A seat assembly for a vehicle including a seat cushion frame and a seat back frame, the latter of which is supported for selective pivotal movement relative to the seat cushion frame about first and second transverse axes which lie in an inclined plane passing through the seat cushion frame and in-



members which include two guide bodies that are arranged at a distance from one another, surround the support rods and



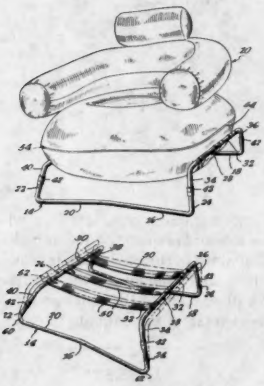
are slightly movable transversely to the longitudinal direction of the support rods.

3,635,528

COLLAPSIBLE BASE FOR INFLATABLE FURNITURE CONSTRUCTION

David H. Strom, Chicago, Ill., assignor to Strom International Associates Ltd., Chicago, Ill.

Filed Mar. 31, 1970, Ser. No. 24,315
Int. Cl. A47c *27/08, 7/14, 27/18, 7/20*
U.S. Cl. 297—456 12 Claims



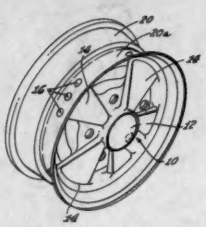
A collapsible cradle or platform for retaining an article of furniture above floor level in an inflated condition. The cradle includes a pair of base or leg members disposed parallel to each other and a pair of side support members joined to the base members to lie normal to said base members. Support straps extend between side members. The side members are bent inwardly toward each other in relaxed position for receipt of the lower surface of the uninflated article of furniture. As the article is inflated, the side members are tensed about the article's lower surface and squeezed against the article to retain the same on the cradle.

3,635,529

MOTOR VEHICLE WHEEL ASSEMBLY

Walter R. Nass, Route 3, Box 505, Escondido, Calif.

Filed June 24, 1969, Ser. No. 835,999
Int. Cl. B60b *1/08*
U.S. Cl. 301—65 3 Claims



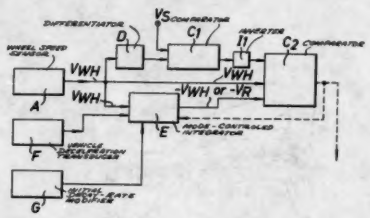
An improved wheel assembly is provided for motor vehicles, and the like, and which includes a central spider formed of any appropriate material, for example, of cast aluminum alloy or other nonferrous material, and a rim of any suitable material, such as steel or equivalent material; and in which a portion of the peripheral surface of the rim is depressed into a cavity in the outer edge of the spider so as to hold the two components of the wheel in a rigid assembly. An improved method for fabricating such a wheel assembly is also provided.

3,635,530

ANTISKID SYSTEMS AND APPARATUS FOR VEHICLES

Mervyn Brian Packer, and Gordon W. Judge, both of Leamington Spa, England, assignors to Automotive Products Company Limited, Leamington Spa, England

Filed Jan. 8, 1970, Ser. No. 1,492
Claims priority, application Great Britain, Jan. 9, 1969, 1,429/69
Int. Cl. B60t *8/12, 8/08*
U.S. Cl. 303—21 P 5 Claims



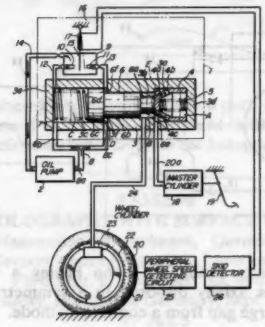
In an antiskid system for vehicles, brake control apparatus for automatically controlling the application of braking pressure to the wheels including sensing means such as a tachogenerator for producing electrical signals which are analogues of wheel speed, means for differentiating the analogue signal transducer means producing signals indicative of vehicle deceleration, means for producing a reference signal having a value determined in accordance with vehicle deceleration, dual-mode integration means responsive to said analogue and reference signals to produce output signals representative of wheel speed when the integrator operates according to one mode and to produce output reference signals representative of vehicle speed and controlled by vehicle deceleration when the integrator operates according to the second mode, a first comparator device responsive to the differentiated signals and a second comparator device being responsive to signals from the first comparator device and the integration means to produce a control signal for the actuation of antilock control valve means to reapply the braking pressure whenever the wheel speed signal is equal in magnitude to the reference speed signal.

3,635,531

ANTISKID DEVICE

Atutoshi Okamoto, Toyohashi-shi; Noriyoshi Ando, Kariya-shi; Koichi Toyama, Toyohashi-shi; Masaharu Sumiyoshi; Hisaji Nakao, both of Toyota-shi, and Hisashi Watanabe, Toyohashi-shi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan and Toyota Jidoshu Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 16, 1969, Ser. No. 885,469
Claims priority, application Japan, Dec. 27, 1968, 44/866
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG 6 Claims



An antiskid device comprising a skid detector composed of a peripheral wheel deceleration detecting circuit and a peripheral wheel subdeceleration detecting circuit for differentiating the output signal from said peripheral wheel deceleration detecting circuit to detect a first derivative of the peripheral wheel deceleration (referred to as the subdeceleration hereunder) which can be regarded to be inversely proportional to the adhesion coefficient of the road surface, and a braking force controlling mechanism to control the braking force to be applied to the wheel, whereby said braking force controlling mechanism is actuated when the peripheral wheel deceleration from said peripheral deceleration detecting circuits exceeds a reference value corresponding to the adhesion coefficient of road, while said reference value is varied in inverse proportion to the output from said peripheral wheel subdeceleration detecting circuit to continuously vary the operation starting point of said braking force controlling mechanism in accordance with the adhesion coefficient of road such that said braking force controlling mechanism is operated to continuously produce the braking force well suited to the adhesion coefficients of roads ranging from a dry asphalt road surface and the like where the adhesion coefficient is large to a snowy frozen road surface and the like where the adhesion coefficient is small, thereby effecting the antiskidding operation safely and efficiently.

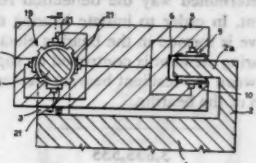
3,635,532

HYDROSTATICALLY SUPPORTED MACHINE TOOL SLIDE

Giorgio Zerbola, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Feb. 4, 1970, Ser. No. 8,479
Claims priority, application Italy, Feb. 8, 1969, 50507 A/69
Int. Cl. F16c *17/00*
U.S. Cl. 308—5 1 Claim

A hydrostatically supported machine tool slide has two spaced-apart bilateral cylindrical hydrostatic bearings for longitudinal movement of the slide along a guide shaft fixed to a bed, together with a bilateral flat hydrostatic bearing acting on a member of the bed to prevent rotation of the slide about the axis of the cylindrical bearing, affording a three-point isostatic support.

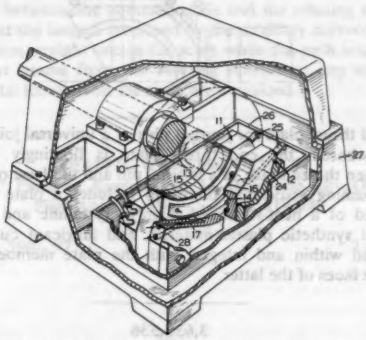


3,635,533

THRUST BEARING

Leslie C. Galloway, Burlington, Ontario, Canada, assignor to Canadian Westinghouse Company Limited, Hamilton, Ontario, Canada

Filed May 25, 1970, Ser. No. 40,165
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 7 Claims



The invention relates to axial thrust bearings for rotating shafts of electrical machines wherein large end thrusts are produced. A source of hydraulic pressure is provided, coupled with a pair of hydraulic pads mounted on each side of a flange on the shaft to apply counter forces maintaining the shaft in a neutral position.

3,635,534

SELF-PRESSURIZING BEARINGS WITH RESILIENT ELEMENTS

Morris A. Barnett, Palos Verdes Estates, Calif., assignor to The Garrett Corporation

Filed Aug. 6, 1969, Ser. No. 848,053
Int. Cl. F16c *17/03*, *17/06*
U.S. Cl. 308—121 21 Claims

A hydrodynamic fluid bearing is disclosed having a deflectable resilient bearing element within the spacing

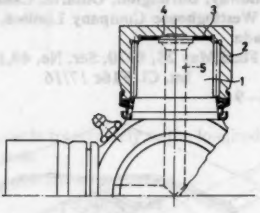
formed between the movable and stationary portions of the bearing. Additionally, resilient bearing stiffeners are positioned immediately adjacent the bearing element for changing in a predetermined way the deflection response of the bearing element. In order to initiate bearing element deformation a groove is formed in the bearing element. Deformation of the bearing element is controlled by support elements positioned between the resilient bearing element and the stationary portion of the bearing.

3,635,535

END THRUST PLATE OF A UNIVERSAL JOINT

Josef Schultenkamper, Essen, Germany, assignor to Gelenkwellenbau GmbH, Essen, Germany

Filed Dec. 2, 1969, Ser. No. 881,403
Int. Cl. F16c *17/04, 33/20*
U.S. Cl. 308—172 **13 Claims**



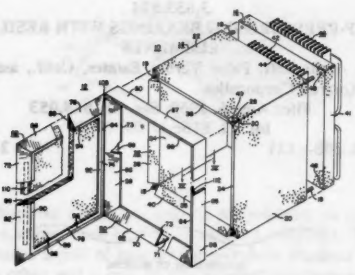
End thrust plate for journal pins of a universal joint cross-link wherein the end thrust plate is floatingly disposed between the end face of a journal pin and the base of a bearing bushing associated therewith includes a plate member formed of a heat-stabilized, highly crystalline and heat-resistant synthetic plastic material, and lubricant cup means molded within and integral with the plate member at opposite faces of the latter.

3,635,536

PORTABLE REFRIGERATOR UTILIZING A LIVING HINGE

Robert S. Lackey, Pittsburgh; Jack D. Meess, Export, and Myron Swetlitz, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1970, Ser. No. 2,850
Int. Cl. A25d *11/00*
U.S. Cl. 312—214 **12 Claims**



This invention relates to a portable refrigerator having a low-cost cabinet of light weight and good insulating properties and includes a plastic breaker strip and plastic door which utilizes a living hinge disposed between these two elements.

ERRATUM

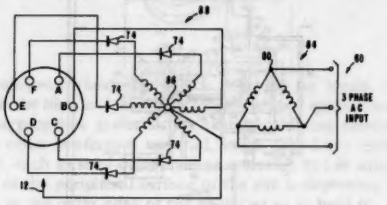
For Class 312—282 see:
Patent No. 3,636,548

3,635,537

MULTIPLE ANODE ARC LAMP SYSTEM

Charles G. Miller, Los Angeles, and Ralph E. Bartera, La Canada, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Dec. 29, 1969, Ser. No. 888,362
Int. Cl. H05b *41/16*
U.S. Cl. 315—145 **10 Claims**



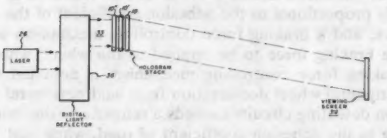
A high-intensity xenon arc lamp having a plurality of separate anodes axially disposed in a symmetrical pattern spaced a discharge gap from a common cathode.

3,635,538

STACKED HOLOGRAM APPARATUS

Henry John Caulfield; Donald H. McMahon, both of Carlisle, and Richard A. Soref, Chestnut Hill, all of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed Feb. 27, 1970, Ser. No. 14,925
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **2 Claims**



A data storage device including a stack of birefringent crystalline holographic plates serially disposed in the path of a playback beam and further including means cooperating with the holographic plates for selectively activating one of them to produce an image of the data recorded therein.

3,635,539

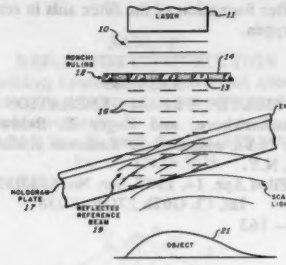
WIDE-ANGLE HOLOGRAPHIC APPARATUS

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation

Filed Aug. 18, 1969, Ser. No. 850,791
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **14 Claims**

A method and apparatus for constructing wide angle holograms. The construction apparatus comprises propagating onto a Ronchi ruling and photographic plate serially disposed in the path of the beam. An object of which a holographic recording is to be obtained is positioned on the side of the plate remote from the light source and ruling. The ruling precludes the direct light beam from impinging on various regions of the plate which is canted with respect to the propagational axis of the direct beam so that the light propagating through the plate is partially reflected from its

rear surface thereby forming a reference beam which is directed onto regions of the emulsion devoid of direct light. The light transmitted through the plate onto the object is



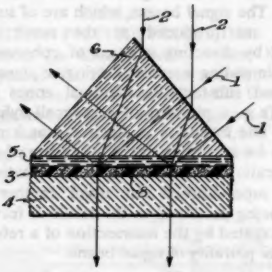
scattered therefrom whereupon that part of the scattered light directed back onto the plate interferes with the reflected reference beam to form the hologram.

3,635,540

HOLOGRAPHY WITH SURFACE WAVES

Heinrich Nassenstein, Leverkusen, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 2, 1969, Ser. No. 854,390
Claims priority, application Germany, Sept. 19, 1968, P 17 97 362.5
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **9 Claims**



A process for the production of holograms wherein only one information carrying spatial frequency is used for recording by simultaneous exposure of a light-sensitive recording material to an imagewise modulated coherent object beam and one coherent reference beam. Further a process for the reconstruction of the hologram wherein the reference beam is the inhomogeneous surface beam which is created on total reflection in the optically thinner medium of the recording layer.

The holograms obtained by the process can be used for the production of semiconductor microcircuit images.

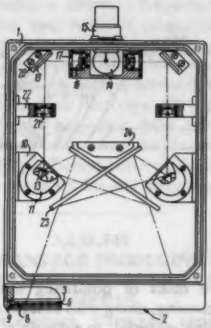
3,635,541

PANEL-TYPE MULTICHANNEL INSTRUMENT

Boris Abelevich Seliber, ulitsa Rentgena, 15/31, kv. 53, Leningrad, U.S.S.R.

Filed May 1, 1969, Ser. No. 820,768
Int. Cl. G01r *13/38*; G02b *17/00*
U.S. Cl. 350—6 **6 Claims**

A panel-type multichannel instrument comprises in each measuring channel identical measuring assemblies. These measuring assemblies comprise rotating mirrors capable of being rotated under the effect of measured variables. A device for producing on a common scale an optical indicator is provided such that the indicator is formed by light beams reflected by the rotating mirrors. Auxiliary mirrors are interposed in the path of the light beams reflected by the rotating



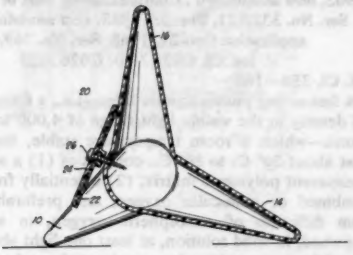
mirrors between the common scale and the rotating mirrors such that the images produced by the auxiliary mirrors lie on a common straight line in the scale while the path lengths of the light beams from the rotating mirrors to any selected horizontal location on the scale are equalized.

3,635,542

TRAFFIC WARNING DEVICE

Alfred P. Parduhn, Route 2, Box 33, Oklahoma City, Okla.

Filed Apr. 24, 1969, Ser. No. 819,040
Int. Cl. G02b *5/12*
U.S. Cl. 350—97 **2 Claims**



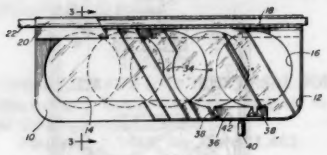
A traffic warning device for use in apprising oncoming vehicular traffic of the presence of an obstacle, construction zone, or other device or location to be avoided by the operators of such vehicles. The warning device is a hollow structure having four conically shaped legs each of which intersects each other leg at an angle of 120° so that the legs collectively form a symmetrical caltrop. Secured to the caltrop in a position in which it touches three of the legs at locations substantially equally spaced from the point of intersection of the axes of the legs is an annular reflector element. By virtue of the securement of the reflector element at this location, it is angled with respect to the vertical when three of the legs are placed on a flat horizontal surface, this angulation being such that light beams from the head lamps of an automobile are reflected along a line which extends substantially coincidentally with a line of vision extending from the driver of the automobile to the traffic warning device.

3,635,543

VARIABLE LIGHT TRANSMISSION DEVICE

James F. Collins, 104 Westerly Terrace, Hartford, Conn.

Filed Dec. 29, 1969, Ser. No. 888,676
Int. Cl. G02b 5/30
U.S. Cl. 350—159 11 Claims



At least two disks of polarizing material are pivotally mounted in a housing, along with at least one stationary sheet of light-polarizing material, to provide a variable light transmission device. The disks are mounted radially adjacent to one another with portions thereof in overlapping relationship, and the sheet of material is in superposed relationship to the disks to provide three layers of polarizing material within the area of overlap. The disks are mounted with their axes of polarization parallel, and they may be simultaneously pivoted in the same direction to vary the level of light passage therethrough. The device has particular applicability as a visor for use in vehicles.

3,635,544

PHOTOCHROMIC POLYMER MATRIX

Robert Franz Stamm; Jacob Solomon Brinen, both of Stamford; Evalyn Hosterman Tennant, Old Greenwich, and Frederick Halverson, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 332,752, Dec. 23, 1963, now abandoned, Continuation-in-part of application Ser. No. 332,921, Dec. 23, 1963, now abandoned. This application Oct. 21, 1968, Ser. No. 769,028
Int. Cl. G02c 7/10; G02b 5/28
U.S. Cl. 350—160 17 Claims

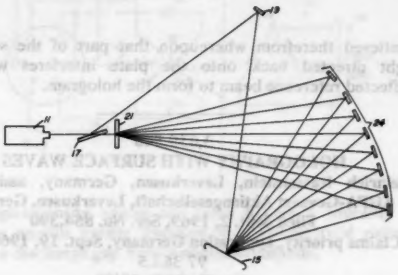
A fast-acting photochromic filter—i.e., a filter whose optical density in the visible light range of 4,000 to 7,500 Angstroms—which is room temperature stable, that is from at least about 20° C. to 80° C., consists of (1) a solid optically transparent polymeric matrix, (2) essentially free from noncombined or molecular oxygen, and preferably protected from diffusion of atmospheric oxygen, in which is (3) dispersed, in solid solution, at least one light absorbing compound having a polynuclear conjugated condensed aromatic ring structure, whose molecules are capable of assuming a metastable triplet state by a process of intersystem crossing (not necessarily of the moiety which assumes the metastable triplet state) and in the triplet state, because of closer triplet states, has energy absorption bands which occur at lower energies (larger wavelengths) than the singlet-singlet absorption for such molecules. A synergic component may also be used as a physically adjacent moiety or molecule in which intersystem crossing occurs more readily than in the light absorbing compound, and which transfers triplet energy to the photochromic moiety. The absorption of singlet-singlet activating energy can be in the synergistic moiety, for single energy transfer, or in the photochromic moiety itself, with transfer of the singlet energy to the synergic moiety, intersystem crossing therein, to triplet energy, and transfer back of the triplet energy to the photochromic moiety, or double energy transfer. Two or more photochromic compounds, with different absorption spectra block "windows" to give absorption over a desired range. Protective glass layers on each side of a photochromic matrix give physical protection, exclude oxygen, and may also be filters for desired ultraviolet and infrared ranges. Polymerization by ionizing radiation gives freedom from interferrants, such as catalysts residues. Evacuation during processing, or heating in vacuum after formation of the filter aids in removal of uncombined oxygen.

3,635,545

MULTIPLE BEAM GENERATION

Alan P. VanKerkhove, and Roger E. Baldwin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1967, Ser. No. 631,031
Int. Cl. G02b 27/10, 27/38
U.S. Cl. 350—163 2 Claims



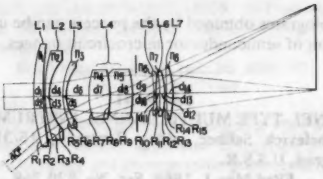
Method and apparatus for generating a plurality of separate and distinct signal beams of mutually coherent radiation. The signal beams, which are of substantially equal intensity, are produced as the result of interference generated by directing a beam of coherent radiation at a radiation-impeding medium having a plurality of regularly spaced and substantially identical zones of variable impedance (e.g., a plurality of very small cylindrical lenses or mirrors). The invention is illustrated as it might be used in apparatus for recording data in the form of a plurality of diffraction gratings of individually unique spatial frequencies effectively superimposed one upon another, the individual gratings being produced as the result of further interference patterns created by the intersection of a reference beam and each of the plurality of signal beams.

3,635,546

RETROFOCUS-TYPE LENS SYSTEM

Ikuo Mori, Kawasaki-shi, Japan, assignor to Nippon Kogaki K.K., Tokyo, Japan

Filed Jan. 20, 1970, Ser. No. 6,821
Claims priority, application Japan, Feb. 8, 1969, 44/9006
Int. Cl. G02b 9/64, 13/04
U.S. Cl. 350—214 2 Claims



A wide angle retrofocus lens system consists of seven lenses L_1 through L_7. Lens L_1 is a positive meniscus with its convex surface directed to an object. Lens L_2 is a first negative meniscus and lens L_3 is a second negative meniscus, and both

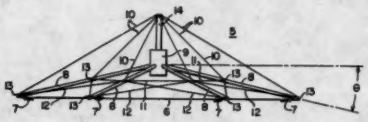
of the convex surfaces of these lenses L_2 and L_3 are directed to an object. Lens L_4 is a positive and lens L_5 is a negative lenses. Lens L_6 is a positive meniscus having concave surface directed to an object. Lens L_7 is a positive lens.

3,635,547

REFLECTOR CONSTRUCTION

Frank C. Rushing; Lynford W. Gilbert, and Albert B. Simon, all of Ellicott City, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1969, Ser. No. 883,016
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 **5 Claims**



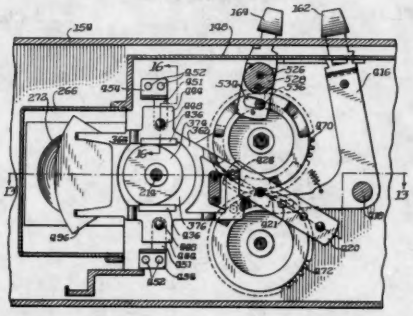
A lightweight reflector construction suitable for use in space, having a thin flexible reflector membrane means stretched flat between the projecting ends of a plurality of arms which extend axially and radially from a central support member about which such arms are distributed. The arms accept the reflector membrane tensioning load in compression along their length and are permitted to be of relatively slender construction by virtue of a rigidizing system of guys that constrain the arms against buckling at spaced apart locations along their length.

3,635,548

MOTION PICTURE PROJECTOR

Jack W. Thomsen, La Grange Park; Arthur E. Nupnau, Chicago; Raymond W. H. Kim, Morton Grove; Jaroslav Cherniavskyj, Skokie, and Kiyoshi Iha, Elk Grove Village, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 19, 1968, Ser. No. 777,018
Int. Cl. G03b *21/18, 21/48, 41/00*
U.S. Cl. 352—79 **16 Claims**



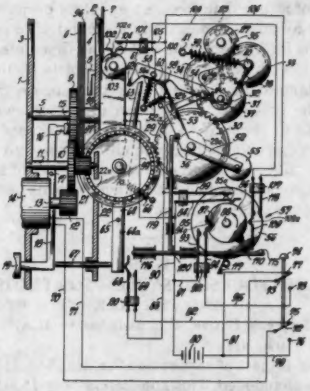
A motion picture projector having a magazine holding a plurality of reels of film any one of which can be selected for projection. Means are provided for automatically unreeling the film from the selected roll, threading it through the projector mechanism to a takeup reel. Provision is made for rewinding the film upon the selected supply reel which rewinding is initiated either automatically at the end of the film or manually prior to that time. A claw mechanism is provided for advancing the film past the film gate in a stepwise manner for film projection. The claw is actuated in an up-and-down direction by a cam which is continuously rotated whenever the projector drive motor is operating. The claw can be shifted with respect to the up-and-down cam thus changing the extent of up-and-down motion and the transverse location of the claw with respect to the film thus providing for two film formats such as Regular 8 and Super 8 motion picture films. The in-and-out motion of claw is provided by a cam follower selectably shiftable between two cam wheels each of which provides a different frequency of in-and-out claw motion so that two rates of projection are possible without introducing flicker in the projected picture. A third selectable position of the cam follower between the two cam wheels prevents in-and-out motion allowing still projection. Interlocks are provided so that the film format may be changed only when the projector drive motor is off, and speed may be changed only when the motor is on. A heat filter is automatically positioned between the light source and film when the projector is set for still projection.

3,635,549

METHOD AND MEANS FOR PRODUCING FADE-IN AND FADEOUT EFFECTS WITH MOTION PICTURE CAMERAS

Albert Stieringer, Calmbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed Mar. 23, 1970, Ser. No. 21,677
Claims priority, application Germany, Mar. 25, 1969, P 19 14 979.2
Int. Cl. G03b *19/18, 21/36*
U.S. Cl. 352—91 **19 Claims**

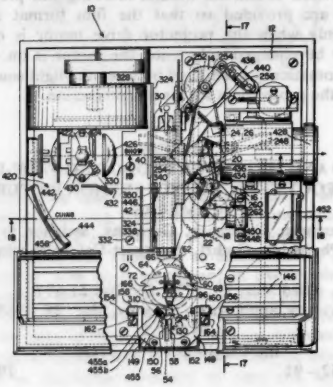


A motion picture camera with automatic dissolving shutter wherein the takeup reel for exposed film is rotated at a reduced speed for a first interval prior to and for a second interval during exposure with fadeout effect so that it collects during the two intervals only that length of film which is exposed during the first interval prior to fadeout. The film which is exposed during fadeout is stored in the space surrounding the takeup reel and is subsequently transported rearwardly to be stored in the space surrounding the supply reel. The once-exposed film is thereupon withdrawn from the space surrounding the supply reel and is exposed for the second time with fade-in effect while the takeup reel rotates at normal speed to collect such film at the rate at which it is transported by the pulldown. A timer which is started in response to reduction in the speed of the takeup reel actuates the dissolving shutter motor to start the fadeout effect after elapse of the first interval and arrests the pulldown and the drive for the takeup reel after elapse of the second interval.

3,635,550
DUAL SLIDE METHOD AND APPARATUS TO PROVIDE SIMULTANEOUS AUTOMATIC CUING AND SHOWING OF SLIDES

Dean M. Peterson, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 27, 1969, Ser. No. 869,658
Int. Cl. G03b *21/26*
U.S. Cl. 353—21 **10 Claims**

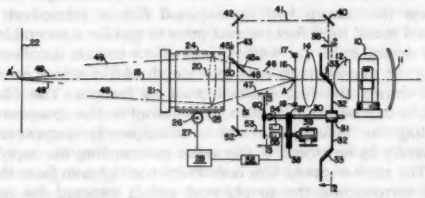


A method and apparatus to effect: 1. the simultaneous movement of a first slide from a tray into a projecting means for viewing by an audience while a second slide in the tray, that contains information relevant to the first slide, is moved into a position where it can be viewed solely by the lecturer to enable him to be automatically cued in on the subject matter of the first slide, 2. to effect the simultaneous return of the slides to the tray, 3. successive dual septum movements of the tray automatically in either a forward or reverse direction so that movement of additional pairs of slides from the tray to their associated audience viewing and lecturer viewing positions can be accomplished.

3,635,551
AUTOMATIC FOCUSING SYSTEM FOR PROJECTORS AND THE LIKE

Oleg Szymber, Elk Grove, Ill., assignor to G.A.F. Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 843,311, July 22, 1969, now abandoned. This application May 18, 1970, Ser. No. 37,950
Int. Cl. G01b *3/00, 21/14*
U.S. Cl. 353—101 **30 Claims**

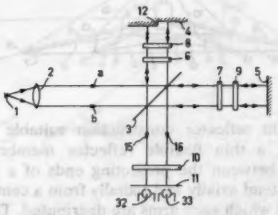


Wave energy is directed from its source to detection means along paths which are defined in part by said wave energy being reflected from the transparency and from the screen. Displacement of the screen, objective lens or transparency will cause displacement of a beam of the wave energy with respect to the detection means thereby to activate the latter. Motive means operated by the detection means moves the objective lens axially thereby to establish focus of the transparency and to reposition the beam of wave energy on the detection means.

3,635,552
OPTICAL INTERFEROMETER

Hendrik de Lang, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 595,712, Nov. 21, 1966, now abandoned. This application Apr. 14, 1970, Ser. No. 28,195
Int. Cl. G01b *9/02*; G02b *21/06*
U.S. Cl. 356—106 **8 Claims**

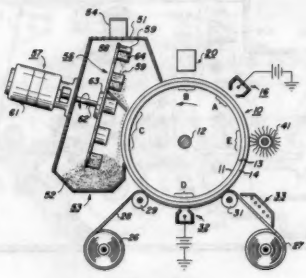


An interferometer employing a beam splitter, and means for circularly polarizing the split beams into mutually opposite directions. The circularly polarized beams are redirected to an analyzer, preferably rotational, to generate a phase interference pattern which is detected by photodetection devices.

3,635,553
CASCADE DEVELOPING APPARATUS UTILIZING A ROTARY WHEEL WITH SCOOPS

John A. Adamek; Vaidevutis C. Draugelis, both of Rochester, and George J. Oriel, Fairport, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,936
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **5 Claims**

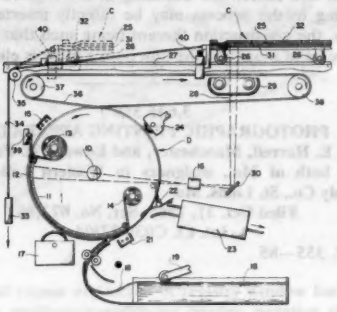


An apparatus for raising developer from a sump to an elevated position over an electrostatic plate bearing a latent image and cascading the developer over the plate to develop the image including a rotating frame having scoops fastened thereto which are filled with developer as they pass through the sump and empty the developer onto a guide member located at the elevated position which directs the developer over the plate. The scoops are independently mounted for rotation on the frame so that each can be orientated to its optimum position for emptying developer therein when at the elevated position.

3,635,554
EXPOSURE SYSTEM

Howard T. Hodges, deceased, late of Perinton, N.Y. (by Claire F. Hodges, executrix), assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 26, 1969, Ser. No. 861,511
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 **7 Claims**

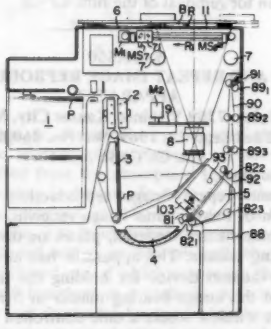


An exposure system is provided wherein a rotatable drum, having a support for an electrophotographic material, is rotatable past a series of processing stations and is connected by means of an endless belt to a carriage, which carriage is reciprocated back and forth across an exposure slit. This is accomplished by means, such as lugs or a clamp, which interlock the belt with the carriage in response to a predetermined position of the electrophotographic material to move the carriage across the exposure slit and thereafter disengage the carriage from the belt so that the carriage may be returned to its initial position by a return means for the next cycle.

3,635,555
ELECTROPHOTOGRAPHIC COPYING DEVICE

Akira Kurahashi; Hisashi Sakamaki; Yoshimasa Kimura, and Katsuo Kusunoki, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1969, Ser. No. 877,673
Claims priority, application Japan, Nov. 25, 1968, 43/102728
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 **20 Claims**

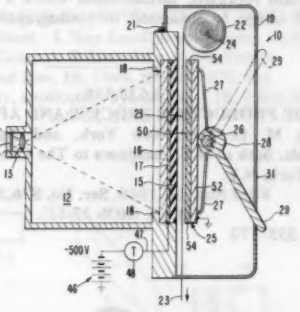


A high-speed electrophotographic copying device is provided which has an original holder having a plurality of original holding surfaces so as to successively set a plurality of originals to be copied at the exposure position without time loss to accomplish the change, means for detecting when two or more sheets of photocopying paper are fed simultaneously through a fault in the feeding means, means for diverting such papers from the exposure section in response to signals from said detecting means, means for detecting a fault in the guide means associated with the charging means, means for detecting the contrast of the original so as to control automatically the exposure, means for detecting the concentration of developing solution from the contrast of the image developed and automatically maintaining the concentration of the developing solution at an optimum level by controlling the addition of concentrated developing solution, and air-conditioning means for recovering or removing the developing solution vapor contained in the air in the device and purifying the air.

3,635,556
ELECTRODUPLICATION APPARATUS EMPLOYING A CONDUCTIVE POROUS ELASTIC PRESSURE PAD FOR PRESSING THE RECORDING MEDIUM AGAINST THE PHOTOCONDUCTOR

Raymond L. Levy, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Feb. 2, 1970, Ser. No. 7,653
Int. Cl. G03g *15/04*
U.S. Cl. 355—16 **8 Claims**



In an electrophotographic apparatus having a photoconductive plate illuminated by a photon image, an elastic pressure pad holds the electrographic paper against the plate. The dielectric surface of the paper overlays the photoconductive plate. A potential is applied from the photoconductive plate through the paper to the pressure pad in order to form a charge image on the dielectric surface corresponding to the photon image.

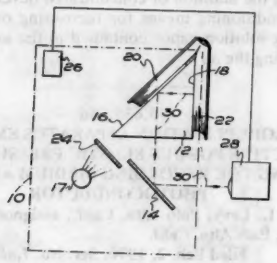
The charge image is subsequently developed by conventional methods employing electrographic toner. During deposition of the charge image, the paper is pressed against the photoconductive plate by means of a conductive, resilient, porous pressure pad. The pad is a carbon filled plastic foam (approximately 53 percent carbon and 47 percent foam) mounted on a firm backing member. The resilience of the foam is approximately 29 p.s.i. per inch of compression and provides good mechanical and electrical contact between the paper and the photoconductive plate. The conductivity of the foam is approximately 3,000 ohms/square unit and provides electrical continuity during the charge image formation. The porous nature of the foam pad permits air bubbles between the pad and the paper to escape through the pad, thus eliminating undesirable voids in the final print.

3,635,557

MEANS FOR PHOTOGRAPHICALLY COPYING BOOK PAGES

Brian Alderton, Leeds, England, assignor to The Scolar Press Limited, Menston, Ilkley, Yorkshire, England

Filed June 2, 1970, Ser. No. 42,696
Claims priority, application Great Britain, Dec. 24, 1969, 62,967/69
Int. Cl. G03b 27/70
U.S. Cl. 355—65 2 Claims



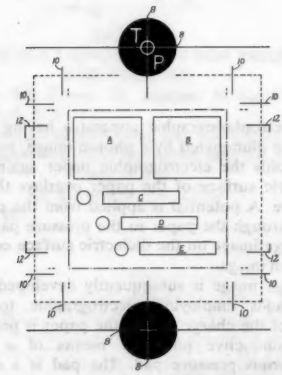
In the photographic copying of a page of a book, the book is partially opened at the page to be copied and a first plane reflective surface lies at an angle to said page and between said page and the opposite page to direct a reversed image on to a second reflective surface from which a corrected and reflected image is presented to photographic copying apparatus.

3,635,558

SLIDE PRODUCTION PROCESS AND APPARATUS

Clarence M. Le Peer, New York, and John H. Mohle, Mineola, both of N.Y., assignors to The Chartmakers, Inc., New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,313
Int. Cl. G03b 27/62
U.S. Cl. 355—72 3 Claims



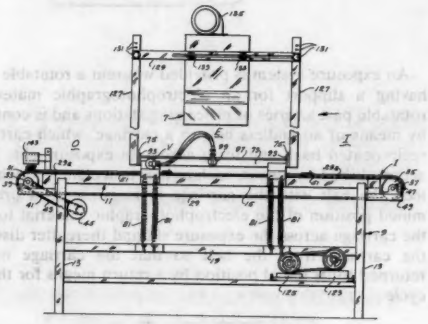
A principal embodiment of the invention disclosed herein is a process for producing photographic slides which, as a consequence thereof, can be separately projected onto a screen in an overlapping manner with images common to both slides in precise registry. The process consists of preparing artwork, such as graphs, diagrams, charts and the like on a specially prepared format and photographing the work. The resulting film is then critically positioned in a device according to markings therein which correspond with markings on the format. The device known as a registration device constitutes another embodiment of the invention. The film is then punched and trimmed in the device, and thereafter mounted on a mask according to its markings whereupon the thusly mounted film is inserted in the usual carrier employed in slide projectors. The device, which is hereinafter designated a registration device, is deemed part of the invention. Alternatively, the invention comprehends slide carriers of unique construction in which the film that has been punched and scored for trimming in the registration device according to the process may be directly inserted into the carriers, the construction thereof being such that the step in the process of mounting the film onto a mask is eliminated.

3,635,559

PHOTOGRAPHIC PRINTING APPARATUS

Robert E. Harrell, Manchester, and Edward H. Parker, Ballwin, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Filed Oct. 31, 1969, Ser. No. 872,867
Int. Cl. C03b 27/04
U.S. Cl. 355—85 27 Claims



A photographic printing apparatus, particularly for exposing lithographic plates to light through films, in which a plate with a film thereon is applied to a conveyor at an input station and conveyed by the conveyor to a position within a vacuum frame unit at an exposure station, after which the vacuum frame is closed and evacuated for pressurizing the plate and film, the exposure is made, the vacuum frame unit is opened, and operation of the conveyor is resumed to convey the plate and film out of the vacuum frame unit to an output station for removal of the film.

3,635,560

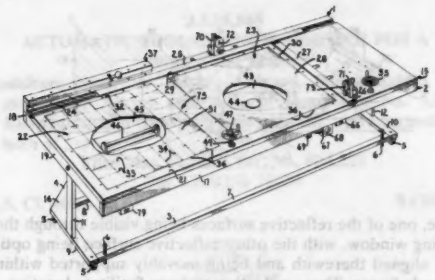
STEP AND REPEAT IMAGE REPRODUCTION APPARATUS

Claude K. Hulen, 7209 Virginia, Kansas City, Mo.

Filed Sept. 24, 1969, Ser. No. 860,612
Int. Cl. G03b 27/04
U.S. Cl. 355—86 9 Claims

A step and repeat image reproduction apparatus for reproduction of images onto image receiving material, such as film, photosensitive material, plates or the like, from an image bearing master. The apparatus has an exposure window and a vacuum device for holding the image receiving material and the image bearing master in firm contact with the exposure window where a time controlled exposure lamp exposes the image receiving material. The image receiving material and the image bearing master are secured to slide members which are movable at right angles with each other for precisely positioning same for exposure. The image receiving material and slide member has a single linear motion, while the image bearing master and respective slide

member has a single linear motion transverse to that of the image-receiving material slide member. The slide members are used conjunctively to make all necessary movements for



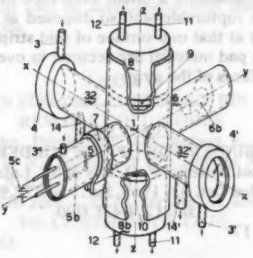
the step and repeat exposures. A registry window has a grid therein for positioning an image bearing negative prior to being secured to a negative carrier to form the master.

3,635,561

APPARATUS AND METHOD FOR DETERMINING THE CONTENT OF CHEMICAL ELEMENTS IN A SOLID SAMPLE

Corrado Bordonali, and Maria Antonietta Biancifiori, both of Rome, Italy, assignors to Comitato Nazionale per l'Energia Nucleare-Cnen

Filed Sept. 24, 1970, Ser. No. 75,188
Claims priority, application Italy, Oct. 4, 1969, 40543-A/69
Int. Cl. G01j *3/30*
U.S. Cl. 356—85 **4 Claims**



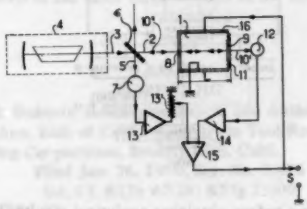
An apparatus is disclosed, to be used in the spectrophotometric analysis of an atomized element, which can be readily shifted from the absorption technique of analysis to the fluorescence technique. In both cases the element to be analyzed is atomized, that is reduced to its basic atomic form by subjecting it to bombardment by the positive ions of a plasma produced within an analysis cell where two electrodes are introduced one of which comprises the element to be analyzed and functions as a cathode. An electric field is applied across said electrodes for producing the plasma while the same electrodes are maintained at a very low temperature by means of a cryogenic fluid and the analysis cell is maintained at a pressure in the range from 0.1 to 50 micron Hg. Some of the apparatus components are readily interchangeable for shifting from the absorption mode of analysis to the fluorescence mode of analysis.

3,635,562

OPTICAL INTERFEROMETER FOR DETECTION OF SMALL DISPLACEMENTS

Jean-Michel Catherin, Savigny-sur-Orge, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Nov. 12, 1968, Ser. No. 775,069
Int. Cl. G01b *9/02*
U.S. Cl. 356—112 **8 Claims**



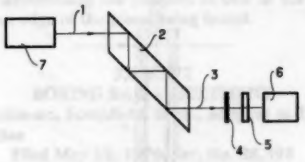
An optical interferometer for detecting small displacements. Two mirrors form a Fabry-Perot cavity. One mirror is mounted to be subject to movement by external displacement forces. The other mirror is subjected to feedback control to reduce low-frequency variations in length of the laser cavity.

3,635,563

APPARATUS FOR DETECTING SMALL ROTATIONS

Jacques Mouchart, L'Hay-Les-Roses, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Nov. 18, 1969, Ser. No. 877,724
Claims priority, application France, Nov. 18, 1968, 174,261
Int. Cl. G01n *21/40*
U.S. Cl. 356—114 **4 Claims**



Slight rotations are detected by the variation, according to the angle of incidence, of dephasing introduced by a total reflection between the light polarized perpendicularly to the plane of incidence, and that which is polarized parallel to this plane. The apparatus includes a polarized light source, a prism with a parallelogram-shaped section in which the light undergoes four total reflections, a dephasing plate, an analysis polarizer, and a light detector.

3,635,564

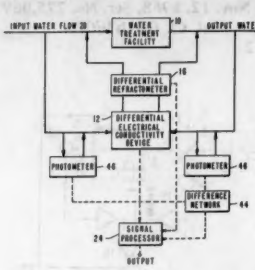
SYSTEM FOR MEASURING ORGANIC CONTENT OF WATER

Mathew M. Zuckerman, Yonkers, and Alan H. Molof, New City, both of N.Y., assignors to Envirotech Corporation, Palo Alto, Calif.

Filed July 31, 1969, Ser. No. 846,335
Int. Cl. G01n *21/46, 29/02*
U.S. Cl. 356—128 **9 Claims**

A system for measuring the soluble organic content of a water sample by employing a refractometer which compares the refractive index of the water sample to the refractive index of a known or related water sample to obtain a measure of the total soluble content and then corrects this value for the content of the soluble inorganic material by use of an

apparatus which compares the electrical conductivity of the water sample to the electrical conductivity of a known or related water sample. The system has the distinct advantage over existing methods of requiring minimal supervision, and



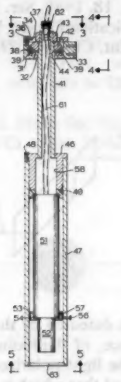
short delay time before obtaining analytical results. Thus the system is particularly adapted for performance monitoring of a water treatment facility or for qualitatively monitoring the soluble organic content of a waterstream.

3,635,565

LASER VERTICAL COLLIMATOR

George P. Colson, Sonoma, Calif., assignor to Engineering Field Services, San Rafael, Calif.

Filed Feb. 16, 1970, Ser. No. 11,377
Int. Cl. G01b *11/27*
U.S. Cl. 356—153 **7 Claims**



To establish as a plumb reference line for construction of buildings or shafts a laser beam is used. A laser source is mounted in a tube, the upper end of the tube is supported so that the weight of the tube and laser source makes the tube assume a vertical position. The support may be mounted on a tripod or side support. For shafts, the laser beam is directed downward. For buildings, the source may be reversed in the tube to be directed upward.

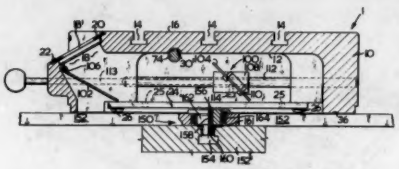
3,635,566

PIN TABLE

Italo Caroli, Westmount, Quebec, Canada, assignor to DBM Industries Limited

Filed Dec. 9, 1969, Ser. No. 883,385
Claims priority, application Canada, Mar. 25, 1969, 046,695
Int. Cl. G01b *11/26*
U.S. Cl. 356—170 **10 Claims**

Positioning apparatus for use with a machine tool such as a drill press or the like. The positioning apparatus comprises a body frame having a viewing window therein; means for enabling the pin table apparatus to be moved so that the workpiece can be placed at said selected location; and a sighting mechanism for locating the predetermined template position. The sighting mechanism includes a pair of reflective surfaces that are spaced apart and are supported by the body



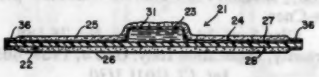
frame, one of the reflective surfaces being visible through the viewing window, with the other reflective surface being optically aligned therewith and being movably supported within the body frame. These reflective surfaces facilitate locating a predetermined template position for positioning the pin table apparatus and workpiece at the location corresponding thereto.

3,635,567

PACKAGE AND APPLICATOR UNIT

Thomas F. Richardson, Jr., 45 Summit Road, Riverside, Conn.

Filed Dec. 31, 1969, Ser. No. 889,536
Int. Cl. B65d *17/00*; A45d *34/00*
U.S. Cl. 401—132 **4 Claims**



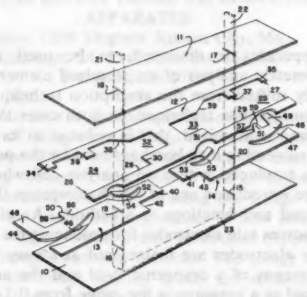
A disposable combination package and applicator unit comprises a flexible laminated strip of moisture impervious material having at one surface a cell integrally formed within the strip and containing a fluent substance to be dispensed. The cell has a rupturable wall so disposed as to release the substance only at that one surface of said strip, and layers of soft absorbent pad material are secured in overlying relation upon both surfaces of the strip.

3,635,568

BINDER FOR OFFICE FOLDER

Anthony Wilmot Dalferes, P. O. Box 3088, Lafayette, La.

Filed Oct. 31, 1969, Ser. No. 872,920
Int. Cl. B42f *3/00*
U.S. Cl. 402—17 **5 Claims**



The improved binder is for use with a bail member including a base bar and the usual flexible prongs in which the

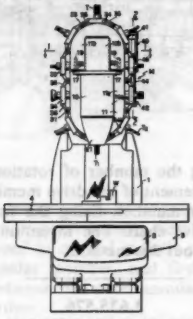
binder forms the usual offsets or bights in the prongs, the invention residing in certain slides through which the prongs pass and are given the offsets by reason of movements of the slides, having latches to retain same in the binder with limited movements.

3,635,569

AUTOMATIC TOOL-CHANGING DEVICE FOR A MACHINE TOOL

Yoshikazu Sato, No. 1,026, 4-chome, Shimotakaido, Suginami-ku, Tokyo, and Tsukasa Funakubo, No. 1,767, Kizukisumiyoshi-chiyou, Kawasaki-shi, Kanagawaken, both of Japan

Filed Mar. 4, 1969, Ser. No. 804,221
Int. Cl. B23b *39/20*
U.S. Cl. 408—35 **9 Claims**



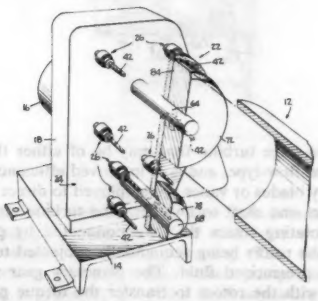
A tool-changing device for a machine tool for selectively presenting a desired tool to the work piece. A number of supports carrying selected tools are pivoted together to form an endless belt. The belt is moved around an elliptical track to present the desired tool to the work station. A power plant engages the tool in the station to provide motive power for the machining operation. The plant is disconnected from the tool after the operation is complete and the belt is moved to present the next tool in accordance with manual or automatic instructions.

3,635,570

APPARATUS FOR DRILLING DRIVE PIN HOLES IN REWIND ROLL CORES

Gerrit DeGelleke, Parsippany, and Robert E. Bush, Morris Plains, both of N.J., assignors to Cameron Machine Company, Dover, N.J.

Filed June 1, 1970, Ser. No. 41,836
Int. Cl. B23b *39/16, 47/16*
U.S. Cl. 408—43 **10 Claims**



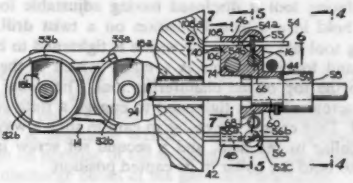
This invention relates to a nonadjustable multispindle drilling assembly for drilling holes in rewind roll cores for receiving drive pins for a first standard diameter rewind roll core and for a second standard diameter rewind roll core, the combination including a first group of a preselected number of spindle assemblies mounted to correspond to the first standard diameter core and a second group of a preselected number of spindle assemblies mounted to correspond to the second standard diameter cores, each of the spindle assemblies being driven by a drive pulley mounted thereon which is driven by an endless timing belt, all of the spindle assemblies being driven in the same direction and at the same rotational speed.

3,635,571

BORING JIG

Horace R. Roberts, Huntington Beach, and Anthony F. Brizzi, Santa Ana, both of Calif., assignors to Tool Research & Engineering Corporation, Beverly Hills, Calif.

Filed Jan. 26, 1970, Ser. No. 5,676
Int. Cl. B23b *47/28;* **B27g** *23/00*
U.S. Cl. 408—97 **15 Claims**



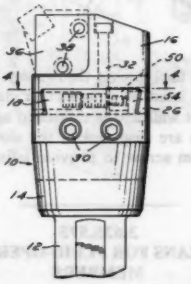
A boring jig for accurately providing two intersecting holes. A typical application of the jig is for boring holes in the face surfaces and one edge of a door to receive a conventional lock set. The boring jig is in the form of a clamping device and has easily adjustable, positive locking means for accurately determining the position of one of the holes with respect to an edge of the piece being bored.

3,635,572

BORING BAR ADJUSTMENT

James J. Robinson, Southfield, Mich., assignor to The Valeron Corporation

Filed May 18, 1970, Ser. No. 38,392
Int. Cl. B23b *29/034*
U.S. Cl. 408—181 **7 Claims**



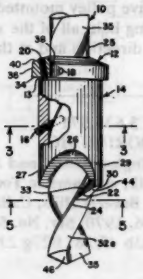
A boring bar having a nose adjustment screw modified to include different pitch threads and travel nut provided on the abutment end of the screw so that the adjustment obtained is a differential and lesser amount than either would provide separately.

3,635,573

ADJUSTABLE CHAMFERING TOOL

William Halpern, Haviland Road, Harrison, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,907
Int. Cl. B23b *51/16*
U.S. Cl. 408—186 **7 Claims**



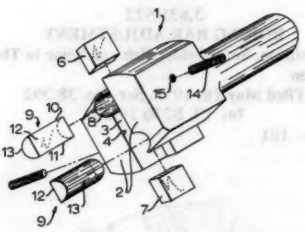
A chamfering tool is disclosed having adjustable locking means to hold in a selected position on a twist drill. The chamfering tool has a set screw which is tightened to hold it in place, and locking means is a collar which is then slid down onto the top of the chamfering tool. The collar has a radial set screw which is tightened to engage a flute surface of the drill. That causes the collar to cant in such a way as to lock the collar to the drill, and a second set screw is then tightened to hold the collar in its canted position.

3,635,574

CUTTING TOOL WITH INSERT CLAMP AND SEAT ARRANGEMENT

Adam A. Schiller, Waukesha, Wis., assignor to Waukesha Cutting Tools, Inc., Waukesha, Wis.

Filed Apr. 2, 1970, Ser. No. 25,112
Int. Cl. B23b *29/03*
U.S. Cl. 408—197 **6 Claims**



A rotary cutting tool having throwaway tool bits disposed in a slot in the tool head. A semicircular clamp is mounted in a groove in the slot wall and is tightened against the bit by a screw. Slide plates are disposed in the slot and are radially adjustable by a cam screw to provide adjustable seating for the bits.

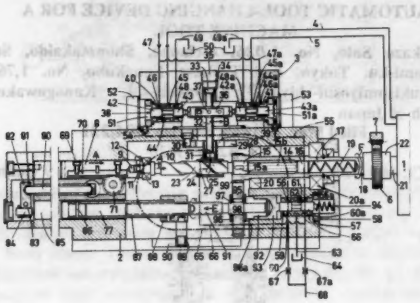
3,635,575

CONTROL MEANS FOR FLUID-OPERATED DRIVE MEMBERS

Jean Cloup, Latresne, France

Filed June 3, 1970, Ser. No. 43,132
Claims priority, application France, June 5, 1969, 6918529
Int. Cl. F01d *13/00*
U.S. Cl. 415—1 **6 Claims**

This invention relates to methods of and means for controlling a fluid-operated drive member arranged to position a movable member, e.g., a tool rest of a machine tool, in a predetermined position. According to the invention, the predetermined position is indicated by respective displacements of at least two members acting on control means for the drive member itself and one of these members is displaced determining the number of rotations of a shaft indicating the displacement of the drive member, the displacements of the other member, fixing the fractional value of rotation of the drive shaft. The invention also provides a device for carrying out this method.

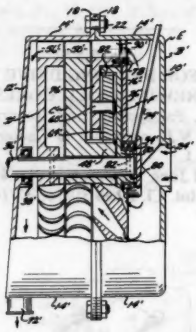


3,635,576

TURBINE STRUCTURE

Gerhard Wieckmann, 640 So. Orange Drive, Los Angeles, Calif.

Filed Apr. 20, 1970, Ser. No. 30,115
Int. Cl. F01d *1/24;* **F04d** *19/00*
U.S. Cl. 415—65 **13 Claims**



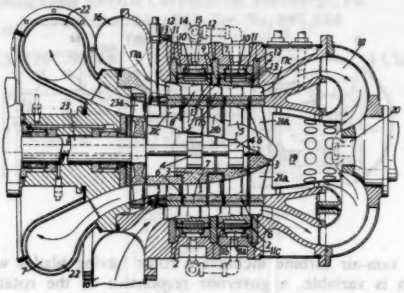
A multiple-stage turbine that may be of either the axial-flow or radial-flow-type, and is of improved efficiency in that no stationary blades or vanes are employed to direct the flow of fluid from one shaft to another. The turbine employs at least two rotating rotors that are connected by planetary gears with the rotors being sequentially subjected to the action of the pressurized fluid. The planetary gear not only cooperates with the rotors to transfer the torque generated by each to the drive shaft, but also reduces the rate of rotation of the drive shaft to a range where it is usable without recourse to an external gear reduction unit.

3,635,577

COAXIAL UNIT

Colin W. Dee, Wimborne, Dorset, England, assignor to Aerostatic Limited, Dorset, England

Filed Apr. 7, 1969, Ser. No. 814,135
Claims priority, application Great Britain, Apr. 11, 1968, 17,551/68
Int. Cl. F01d 1/04, 5/06; F04d 29/02
U.S. Cl. 415—79 4 Claims



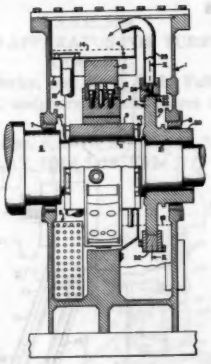
A turbine rotor construction, for example in a gas turbine, has in combination an outer annular member, an inner annular member disposed in coaxial radially spaced relationship to said outer annular member, and first impeller blading means disposed between said outer annular member and said inner annular member.

3,635,578

VISCOUS PUMP FOR UNITIZED BEARING LUBRICATION SYSTEM

James B. Wagner, Lynn, Mass., assignor to General Electric Company

Filed Apr. 16, 1970, Ser. No. 29,125
Int. Cl. F01d 1/36
U.S. Cl. 415—90 4 Claims



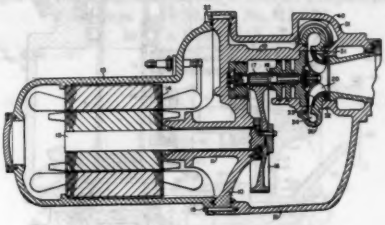
An individual lubrication system for a bearing with a viscous pump, gravity feed tank and heat exchanger integrated within the bearing housing. The viscous pump scraper serves to support the viscous pump casing from a universal connection so that hydrodynamic alignment between the casing and the pump disk is maintained for high-speed pumping.

3,635,579

DISCHARGE NOZZLE ARRANGEMENT FOR CENTRIFUGAL GAS COMPRESSOR

Gary R. Wood, Waynesboro, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1970, Ser. No. 14,472
Int. Cl. F04c 29/00; F04b 39/00
U.S. Cl. 415—119 4 Claims



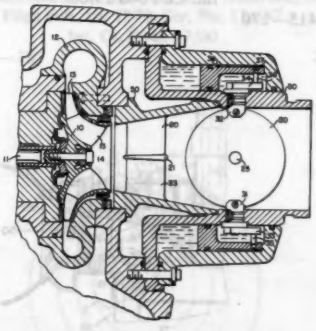
A centrifugal gas compressor impeller with a surrounding gas-collecting scroll is enclosed within an outer casing or housing to provide good appearance and reduced noise transmission. A discharge nozzle is detachably secured to pass through an opening of the housing with its inner end received in the discharge outlet of the gas-collecting scroll.

3,635,580

CENTRIFUGAL REFRIGERANT GAS COMPRESSOR CAPACITY CONTROL

Douglas K. Richardson, Staunton, and John G. Johnson, Waynesboro, both of Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1970, Ser. No. 14,471
Int. Cl. F04d 27/00
U.S. Cl. 415—150 2 Claims



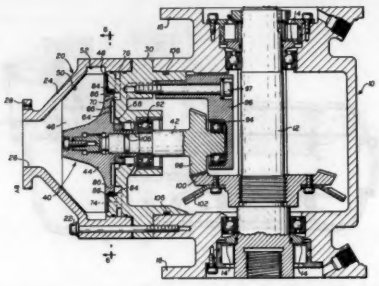
A capacity control for a refrigerant gas compressor is comprised of a throttle disk in a throttle intake passage leading to a nozzle intake passage extending to the intake portions of a rotatable centrifugal gas impeller and gas flow directing vanes are positioned within the nozzle intake passage to properly direct the gas flow from the throttle disk to the impeller vanes.

3,635,581

HIGH-PRESSURE CENTRIFUGAL PUMP

Kenneth E. Nichols, Arvada, Colo., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,285
Int. Cl. F04d 29/00; F01d 11/00
U.S. Cl. 415—169 8 Claims



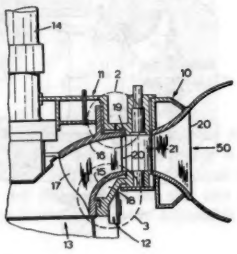
This centrifugal pump for high-pressure service has novel sealing means for preventing the fluid being pumped from reaching the bearings of the impeller shaft. The back of the impeller on the side opposite the pumping vanes has shallow vanes that run close to a confronting face of the pump housing for displacing leakage fluid back to the pump inlet. Leakage is maintained at a low value by a generally cylindrical portion on the back of the impeller running with close running clearance in a plastic sleeve in the backwall of the pump housing. The impeller shaft bearings are in a gear housing secured to the pump and have their own means of lubrication.

3,635,582

SEALS FOR HYDRAULIC MACHINES

Robert Stanley Sproule, Montreal, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Mar. 16, 1970, Ser. No. 19,769
Claims priority, application Canada, Mar. 19, 1969, 46,107
Int. Cl. F04d 29/08
U.S. Cl. 415—170 10 Claims



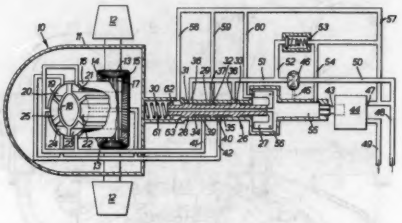
A pump, turbine or pump turbine having a runner with a crown and a band shroud is provided with annular cartridge seals which may be released from the machine housing, to permit disassembly of the machine even though the seals are seized to the runner. The seals each include an air separator and seal water provision, to permit efficient operation of the machine as an aerated machine having air admitted so as to exclude water from the annular zones external of an adjacent to the runner shroud outer surfaces.

3,635,583

RAM-AIR TURBINES

John Alfred Chilman, Painswick, and Richard James Wall, Churchdown, both of England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Nov. 7, 1969, Ser. No. 874,800
Claims priority, application Great Britain, Nov. 15, 1968, 54,236/68
Int. Cl. F01d 7/02
U.S. Cl. 416—48 13 Claims



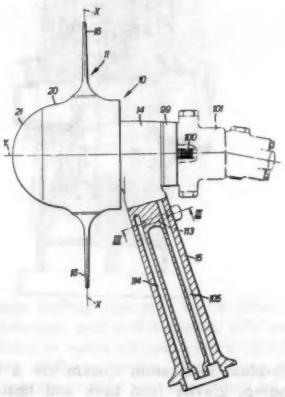
A ram-air turbine includes a rotor having blades whose pitch is variable, a governor responsive to the rotational speed of the rotor, and an actuator for effecting pitch variation of the blades. A valve is provided whose position is controlled by the governor for directing fluid under pressure to at least one part of the actuator to effect pitch variation in one direction and for directing fluid under pressure to at least one other part of the actuator to effect pitch variation in the other direction when the rotational speed of the rotor is above a predetermined value. The valve is also arranged to connect all the parts of the actuator to a source of low pressure when said speed is below the predetermined value.

3,635,584

RAM-AIR TURBINES

John Alfred Chilman, Painswick, and Richard James Wall, Churchdown, both of England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Nov. 7, 1969, Ser. No. 874,802
Claims priority, application Great Britain, Nov. 15, 1968, 54,284/68
Int. Cl. F01d 7/02
U.S. Cl. 416—48 10 Claims



A ram-air turbine comprises a variable-pitch bladed rotor, a hydraulic actuator for effecting pitch variation of the blading of the rotor, and a pump driven by the rotor to supply fluid for operation of the actuator. A rotary speed-sensitive

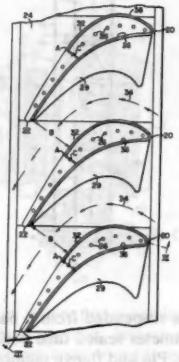
flyweight governor is provided to control the supply of fluid to the actuator whereby to cause the rotor automatically to rotate at constant speed, and the arrangement includes a machine driven by the rotor. The rotor, hydraulic actuator, pump, governor and driven machine are all coaxially arranged.

3,635,585

GAS-COOLED TURBINE BLADE

Charles Walter Metzler, Jr., Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1969, Ser. No. 887,544
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 **4 Claims**



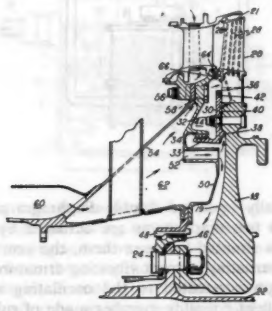
A cooled turbine blade for gas turbines and the like having passageways for conducting a relatively cool fluid through the blade to its tip and incorporating a walled cavity at the tip of the blade. The wall of the cavity has a cutaway portion which permits the cooling fluid to discharge into a main gas stream through the turbine at the area of lowest pressure on the blade surfaces. This permits the flow of fluid from the discharge orifices of the passageways to be more uniform from the leading to the trailing edge of the blade and reduces the required gas pressure on the entire cooling system.

3,635,586

METHOD AND APPARATUS FOR TURBINE BLADE COOLING

Nelson H. Kent, Derby, and Keith P. L. Fullagar, Spondon, both of England, assignors to Rolls Royce Limited, Derby, England

Filed Apr. 6, 1970, Ser. No. 25,740
Int. Cl. F01d *5/18;* **F02c** *7/12*
U.S. Cl. 416—97 **10 Claims**



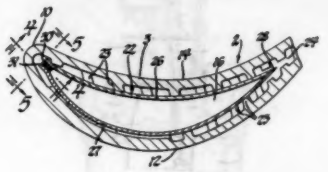
A method of cooling turbine blades of a fluid flow machine in which relatively low-temperature air is bled from a relatively high-pressure source and is split into at least two separate portions, one portion of which is fed to the leading edge of one or more of the blades of a turbine and the other portion of which is fed into one or more of the blades at a location rearwardly of the first portion.

3,635,587

BLADE COOLING LINER

Richard C. Giesman, and Ronald P. Schwedland, both of Indianapolis, Ind., assignors to General Motors Corporation

Filed June 2, 1970, Ser. No. 42,677
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 **6 Claims**



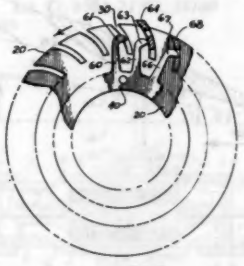
A sheet metal liner for an internally air-cooled turbine blade is of generally airfoil shape and is spaced from the interior of the hollow blade by bosses extending from the blade wall. The liner is closed at its edge toward the trailing edge of the blade and is partially closed at its forward edge. At the forward edge, a row of nozzles to jet cooling air against the interior of the leading edge of the blade is defined by two strips of sheet metal bonded together having grooves etched into their abutting faces, which grooves are registered to define nozzles of converging configuration.

3,635,588

DETENT MECHANISM FOR RETAINING VANES IN A CIRCULARLY DRIVEN IMPELLER

Robert W. Lester, 54 George Street, Manhasset, N.Y., and Thomas Rockson, 1920 Railroad Ave., Holbrook, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,687
Int. Cl. F04d *17/00*
U.S. Cl. 416—187 **2 Claims**



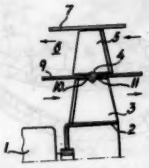
An air impeller is assembled on a group of vane holder end plates having slots therein, of somewhat crescent shape, to receive the ends of vanes held in alignment symmetrically around an axis, each vane holder end plate having coordinated therewith a spider spring which is fastened to the face of the vane holder plate, the spider spring having a plu-

rality of circumferentially located resilient detent extensions, suited to engage each vane when it is slipped into place, the engagement being positive in a groove or notch in the vane, thereby to form a positively unitary assembled device for use in the blower.

3,635,589
DOUBLE IMPELLER WHEEL

Svend Helge Kristiansen, Naestved, Denmark, assignor to Nordisk Ventilator Co. A/S, Naestved, Denmark

Filed Mar. 13, 1970, Ser. No. 19,182
Claims priority, application Denmark, Mar. 31, 1969, 1790/69
Int. Cl. F04d *19/00*
U.S. Cl. 416—193 8 Claims

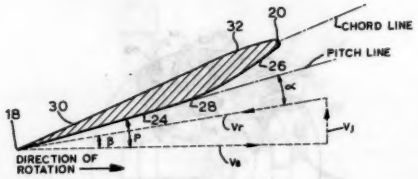


A double impeller wheel for axial flow fans comprising a set of inner impeller blades surrounded by an intermediate ring, a set of outer impeller blades secured to the ring, the width of the ring in an axial direction being less than that of the impeller blades.

3,635,590
PROPELLER

Adrian Phillips, 14 Deer Park Crescent, Toronto, 7, Ontario, Canada

Filed Feb. 16, 1970, Ser. No. 11,382
Int. Cl. B63h *1/26*
U.S. Cl. 416—223 6 Claims

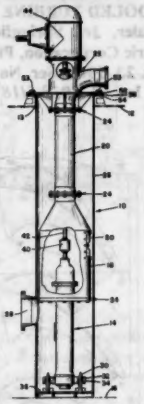


A marine propeller having a convex shape on the blade rearward surface extending from the blade leading edge and terminating intermediate the blade leading edge and trailing edge, and a substantially planar forward blade surface, whereby the major portion of thrust from the blade is derived from the convex rearward surface of the blade.

3,635,591
BARGE PUMP

Jesse J. Wilkinson, Greensboro, N.C., assignor to Gilbert & Barker Manufacturing Company, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,104
Int. Cl. F04b *17/00;* B67d *5/40;* F03c *3/00*
U.S. Cl. 417—410 10 Claims

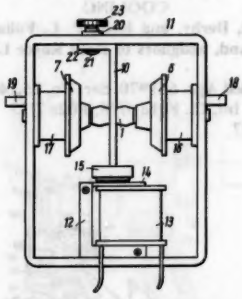


A pump unit is suspended from a barge deck and located within a large diameter sealed tube positioned on the bottom wall of the barge. Pin and flange members position the lower end of the pump unit against lateral movement while permitting the unit to be readily removed from the barge.

3,635,592
ELECTRICALLY OPERATED DOUBLE-DIAPHRAGM PUMP

Erwin Kolfertz, Turnerstrasse 22, Solingen-Merscheid, Germany

Filed May 6, 1970, Ser. No. 34,999
Claims priority, application Germany, July 29, 1969, P 19 38 430.6
Int. Cl. F04b *43/00, 45/00*
U.S. Cl. 417—413 4 Claims



An electrically operated double-diaphragm pump of the kind in which two diaphragms are actuated by a common oscillating arm situated between them, the arm being oscillated by an alternating current vibrating armature motor, has each diaphragm connected to the oscillating arm directly through a resilient coupling member made of rubber or rubberlike plastics material. The coupling member consists of a tube with a solid part in its middle to which the arm is fixed

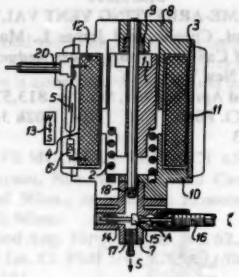
and the diaphragms are fixed, one to each end of the tube, by means of pins, one of which is fixed to each diaphragm and which fit one in each end of the tube. The pins may have heads which fit in internal sockets within the tube to hold the pins in the tube as the arm oscillates.

3,635,593

DEVICE FOR BODY CARE

Michel A. Moret, Geneva, Switzerland, assignor to Institut de Recherche et de Diffusion Industrielle P.G.E. Woog, Geneva, Switzerland

Filed Dec. 15, 1969, Ser. No. 885,221
Claims priority, application Switzerland, Dec. 13, 1968, 18573/68
Int. Cl. F04b *35/04, 49/00*
U.S. Cl. 417—417 **4 Claims**



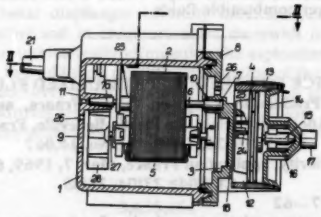
An electromagnetic pump for supplying liquid pressure pulses to oral hygiene devices imposing different loads thereon includes a plunger-core driven in one direction by an electromagnetic circuit supplied with constant frequency pulses at power line frequency, a spring providing a restoring force so that the plunger-core reciprocates. The plunger-core drives a pump for producing the liquid pressure pulses, advantageously by using one end of the plunger-core as the piston of a pump. The mechanical resonant frequency of the plunger-core and spring is higher than the applied pulse frequency, and predetermined to yield an approximately constant amplitude of reciprocation for different loads imposed on the pump.

3,635,594

ELECTRIC MOTOR AND IMPELLER-TYPE PUMP ASSEMBLY

Gunther Eheim, Plochinger Str. 32, 7301 Deizisau, Germany

Filed Feb. 26, 1970, Ser. No. 14,557
Claims priority, application Germany, Oct. 17, 1969, P 19 52 353.6
Int. Cl. F04b *17/00, 35/04;* **H02k** *17/10*
U.S. Cl. 417—420 **14 Claims**



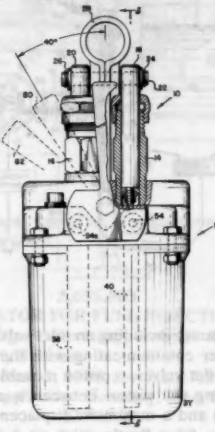
The drive motor for an impeller-type pump is retained in a housing, the motor having its shaft coaxial with the pump shaft. The housing is hollow and tubular and closed at the side remote from the pump housing, the motor housing having in the interior thereof motor holding and locating stubs, for example to retain resilient (rubber) bushings secured to projecting bolts from the motor, so that the motor can be axially inserted in its housing, and the pump assembly forming the cover for the tubular housing and retaining the bolts, and thus the motor in position. Motor and pump are preferably interconnected by means of a magnetic coupling, so that the pump chamber can be sealed from the motor housing. Electrical connections by means of pins and plugs avoid soldering of wires internally of the housing.

3,635,595

DUAL PUMP AND FLUID MOTOR SYSTEM

Gordon H. Allard, Menomonee Falls, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Jan. 16, 1970, Ser. No. 3,267
Int. Cl. F04b *23/04;* **B62d** *5/40*
U.S. Cl. 417—426 **9 Claims**



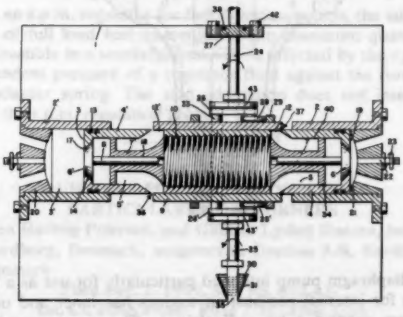
A dual pump and fluid motor system comprising two pumping chambers, two hydraulic cylinders with pistons, a reservoir and dual conduit means to communicate the reservoir to the pumping chambers and the pumping chambers to the cylinders. Suitable inlet and outlet check valves are positioned between the reservoir and the chambers and between the chambers and the cylinders respectively in each conduit. The check valves are normally in a position permitting simultaneous charging of both cylinders but may be selectively unseated by a single lever means to charge only one cylinder while holding the other in a fixed position, or to release both cylinders at the same time or to release one cylinder while charging the other.

3,635,596

VALVED TWIN-PISTON

Lewis Richter, 2nd & Valnut St., Des Moines

Filed Jan. 13, 1970, Ser. No. 2,980
Int. Cl. F04b *21/00, 39/00*
U.S. Cl. 417—459 **16 Claims**



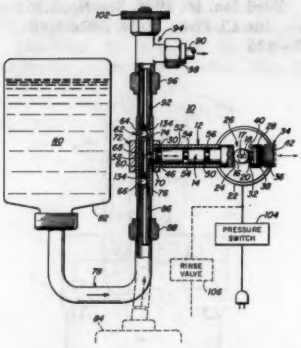
A compressor having a valved twin-piston reciprocating in a cylinder disposed in an air container. Part of the air compressed is used to power auxiliary drive means for the compressor.

3,635,597

INJECTION PUMP

Donald J. Marten, Plymouth, Mass., assignor to W. C. Bonner Company, Inc., Watertown, Mass.

Filed Sept. 4, 1969, Ser. No. 855,322
Int. Cl. F04b *21/02, 49/00*
U.S. Cl. 417—568 **4 Claims**



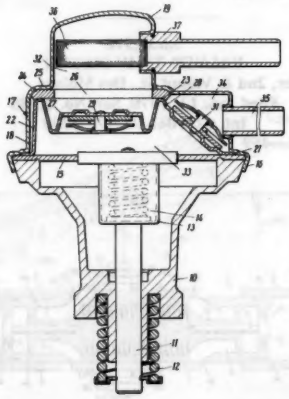
An injection pump including an inlet valve, an outlet valve, a pump chamber communicating with the volume between the inlet and outlet valves, a piston movable in the chamber, means for driving the piston between a zero displacement volume position and a maximum displacement volume position, and means for adjusting the maximum displacement volume of the piston.

3,635,598

DIAPHRAGM PUMP

Horst Sieper, Neuss/Rhine, Germany, assignor to A. Pierburg Auto.-und Luftfahrt-Geratebau KG, Neuss/Rhine, Germany

Filed Aug. 28, 1969, Ser. No. 853,666
Claims priority, application Germany, Sept. 5, 1968, P 17 28 171.9
Int. Cl. F04b *39/10, 37/00*
U.S. Cl. 417—571 **8 Claims**



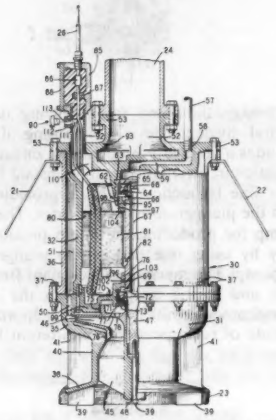
A diaphragm pump intended particularly for use as a fuel pump for internal combustion engines has inner and outer housings separated by a diaphragm. The space contained between the diaphragm and the outer housing forms the working space of the pump through which the fluid is sucked in and discharged. This space is divided by a single unitary separating wall into three separate chambers. This is effected by clamping the edge of the separating wall between the diaphragm and the rim of the outer housing and forming the separating wall so that it also forms a second seal against the outer housing. This second seal extends round a closed path and the space between the outer housing and the separating wall within this seal forms a suction chamber and the space outside this seal is divided by a further part of the separating wall into a working chamber partly defined by the diaphragm and a pressure chamber. The separating wall is provided with a suction nonreturn valve between the suction chamber and the working chamber and an outlet nonreturn valve between the pressure chamber and the working chamber.

3,635,599

FLAME-ARRESTING VENT VALVE

Gerald T. Bryant, Corona, and James L. Mayfield, Garden Grove, both of Calif., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,574
Int. Cl. F04b *17/00, 35/04;* H02k *5/10*
U.S. Cl. 417—53 **16 Claims**



This invention relates to a flame-arresting vent valve which is positioned to communicate with the uppermost portion of the motor casing of a submersible pump. The vent includes a pressure-actuated valve member and a flame arrester made of porous material to prevent the propagation of flame across the valve. This invention is especially suited for use in pumps which deliver combustible fluids.

3,635,600

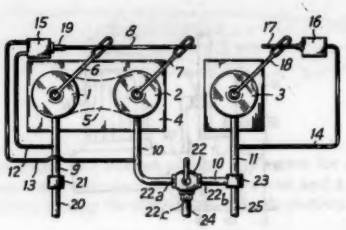
DEVICE FOR FEEDING PRESSURIZED FLUID

Pierre A. Praddaude, Crepy-en-Valois, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, France

Filed Feb. 25, 1970, Ser. No. 14,067
Claims priority, application France, Mar. 7, 1969, 6906559
Int. Cl. F04b *23/04, 23/08*
U.S. Cl. 417—62 **5 Claims**

This invention relates to a device for feeding pressurized fluid to at least two supply circuits by two groups of variable discharge pumps, the first group of pumps comprising two distinct delivery conduits and a first power regulator being coupled with the member for controlling the discharges of said first group of pumps, while a second power regulator is coupled with the member for controlling the discharge of the second group of pumps, wherein the first power regulator is of the pressure simmation type, the second group of pumps

comprises a single delivery conduit and the first delivery conduit of the first group of pumps and the single delivery conduit of the second group of pumps are connected to the first supply circuit, while the second delivery conduit of the first group of pumps is connected to the second supply circuit.



3,635,601

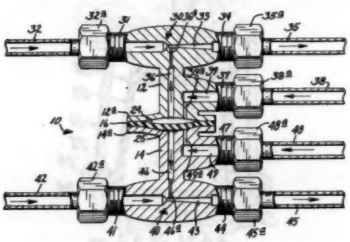
FAIL-SAFE MULTIPLE PRODUCT ASPIRATOR

Spencer B. Larson, New Brighton, and Carl A. Miller, St. Paul, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Aug. 10, 1970, Ser. No. 62,359

Int. Cl. F04f *5/48;* **G05d** *11/00*

U.S. Cl. 417—191 **10 Claims**



Apparatus including a dual product venturi aspirator and a fail-safe diaphragm valve. A first venturi aspirator is utilized to draw a first additive (e.g. an alkaline cleanser) into a carrier liquid (e.g. water) flowing therethrough and, similarly, a second additive (e.g. a chlorinating agent) is drawn by a second venturi into a carrier liquid flowing therethrough. A fail-safe elastic diaphragm centrally mounted between the two aspirators and in communication therewith is operable thereby for automatically terminating the aspiration of either one of the two additives upon the exhaustion of the supply of the other additive, thereby assuring simultaneous injection of the two additives into a cleansing system. Fail-safe apparatus for providing simultaneous injection of three additives is also disclosed.

3,635,602

LIFTING TIP SEAL PUMP

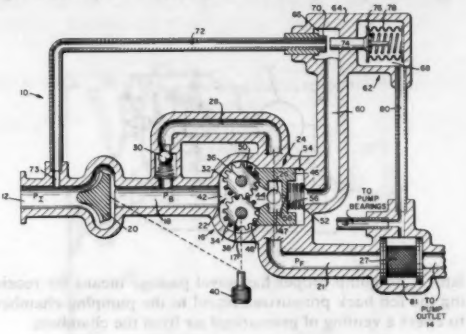
Charles W. Grennan, Newington, and Evert von Moltke, Hartford, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Sept. 17, 1970, Ser. No. 73,378

Int. Cl. F04b *23/14, 23/08, 49/00*

U.S. Cl. 417—201 **8 Claims**

A pumping system has a centrifugal pump and a tip seal-type positive displacement pump which includes a seal block. Means are provided to move the seal block away from the gears of the tip seal pump at a predetermined centrifugal pump discharge pressure.



3,635,603

RPM REGULATOR FOR FUEL INJECTION PUMPS

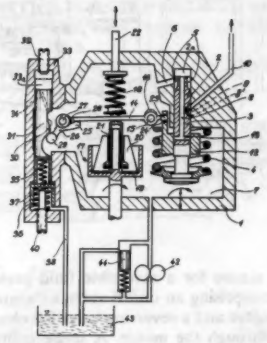
Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 6, 1970, Ser. No. 17,199

Claims priority, application Germany, Mar. 14, 1969, P 19 12 919.2

Int. Cl. F04b *49/00, 7/04*

U.S. Cl. 417—282 **6 Claims**



In an r.p.m. regulator for fuel injection pumps, the adaptation of full load fuel quantities to the maximum quantities combustible in a smokefree manner is effected by the r.p.m.-dependent pressure of a regulator fluid against the force of an adapter spring. The said adaptation does not interfere with the r.p.m. regulation proper.

3,635,604

EQUIPMENT FOR DELIVERING LIQUID, PARTICULARLY OIL BURNERS

Jorgen Hartvig Petersen, and Gunnar Lyshoj Hansen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

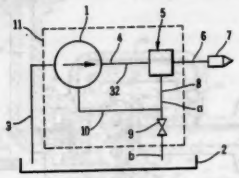
Filed Dec. 2, 1969, Ser. No. 881,437

Int. Cl. F04b *49/00;* **F01c** *1/10;* **F04c** *1/06*

U.S. Cl. 417—304 **2 Claims**

The invention relates to an oil pump unit for oil burners which includes a known assembly of a geared pump, a sump

at a lower level, and a pressure regulator valve. Air vent means are provided which includes apparatus for feeding back to the pump pressurized liquid from the pressure regulator. The pump proper has novel passage means for receiving the fed back pressurized liquid to the pumping chambers to effect a venting of pressurized air from the chambers.



3,635,605

CONTROL MEANS FOR REVERSIBLE FLUID PRESSURE OPERATED MOTORS

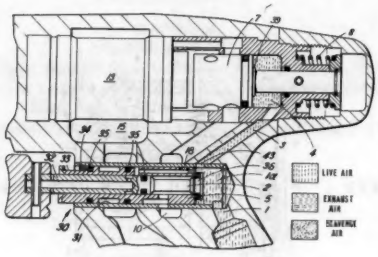
Raymond John Hall, High Wycombe, and Derek James Webb, Sonning, both of England, assignors to Broom and Wade Limited, Buckinghamshire, England

Filed Mar. 10, 1970, Ser. No. 18,177

Claims priority, application Great Britain, Mar. 17, 1969, 13,910/69

Int. Cl. F04b *49/02*; **H01b** *11/16*

U.S. Cl. 417—315 **5 Claims**



A control means for a reversible fluid pressure operated power tool comprising an on/off valve to control the flow of fluid to the motor and a reversing valve for changing the path of the fluid through the motor. A single manually operable control is provided for the valves, which control is movable from a first position in which the motor is inoperative to a second position in which the motor runs in one direction, and then to a third position in which the motor runs in the other direction.

3,635,606

SUBMERSIBLE PUMP ASSEMBLY

Albert Blum, Scheiderhohe (Siegkreis), Germany

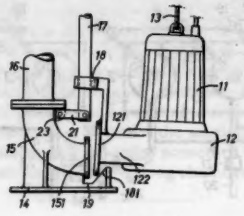
Filed Dec. 22, 1969, Ser. No. 887,186

Claims priority, application Germany, Dec. 24, 1968, P 18 16 852.0

Int. Cl. F04b *17/00*; **G01f** *11/36*

U.S. Cl. 417—360 **5 Claims**

A submersible electric motor-pump assembly having a drive motor and a pump connected therewith which is lowerable into a body of fluid. The assembly includes means for guiding same having at least one guide element; the guide element guiding the assembly in its descending movement and is connectable in the lowered position with the inlet of a conveying pipe. The guide element serves for the guidance of a guide sleeve connected with the pump assembly, and the guide sleeve in its movement acts upon intermediate elements which control the connection of the pump outlet with the inlet of the conveying pipe.



3,635,607

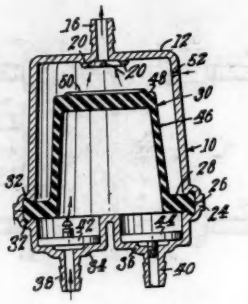
VACUUM PUMP

Frederick G. J. Grise, North Brookfield, Mass., assignor to Novelty Tool Co., Inc., Spencer, Mass.

Filed Apr. 20, 1970, Ser. No. 29,989

Int. Cl. F04b *43/10, 45/00*

U.S. Cl. 417—394 **3 Claims**



A vacuum pump comprising a closed housing, an elastometric diaphragm in the form of a cup therein, said diaphragm having a rim, said rim being sealed into the wall of the housing, said diaphragm dividing the housing into two chambers one including the interior of the diaphragm and the other being at the exterior thereof, a constant vacuum outlet for the latter chamber and a pair of check valves which are substantially the same but reversed for the chamber at the interior of the diaphragm.

3,635,608

MAGNETIC DISK ASSEMBLY

Howard S. Crouch, Chandlers Ford; Hugh G. Dickie, North Baddesley; Albert H. Metcalfe, Fareham, and Leo J. Rigbey, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,780

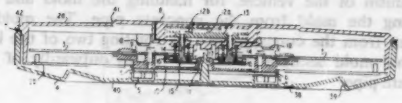
Claims priority, application Great Britain, Mar. 26, 1969, 15,818/69

Int. Cl. B65d *21/02, 45/00*; **G11b** *1/02, 11/02, 17/26, 23/04, 25/04*

U.S. Cl. 206—62 R **15 Claims**

A cartridge for a magnetic disk assembly includes a cover for enclosing a multiplicity of magnetic disks, the assembly

having top, side, and bottom portions, wherein the side portion has an aperture for permitting the insertion of a magnetic transducer, the bottom portion has means for connecting the enclosed disk assembly to a drive unit and a removable base for covering the aperture in the side portion.



3,635,609

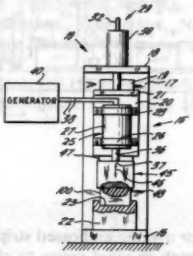
APPARATUS FOR EMBOSSING OF MATERIALS WITH HIGH-FREQUENCY VIBRATIONS

Lewis Balamuth, Washington Square West, New York, N.Y., assignor to Cavitron Corporation, Long Island, N.Y.

Continuation of application Ser. No. 572,064, Aug. 12, 1966, now abandoned. This application July 26, 1968, Ser. No. 751,008

Int. Cl. B30b *15/00*

U.S. Cl. 425—3 **12 Claims**



A workpiece which is to have a raised pattern applied to at least one surface thereof is positioned in the apparatus between a support member and a die member, the surface of the die member being a reverse image of the desired pattern. While the die member and workpiece are held in contact by a static force, high-frequency vibrations are applied to impress the pattern on at least one surface of the workpiece. Several alternate embodiments involve rotating dies or relative movement between the source of vibrations and the die and workpiece in a plane perpendicular to the direction of the high-frequency vibrations.

3,635,610

TIRE CONDITIONING APPARATUS

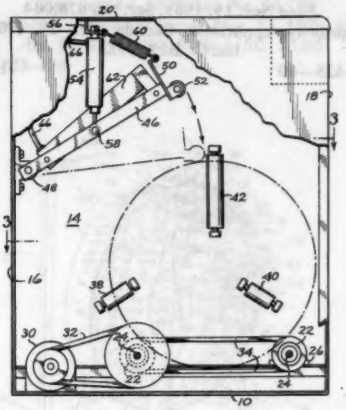
Walter Dennis Hall, and Malcolm Jean Charles, both of Lodi, Calif., assignors to Super Mold Corporation

Filed Dec. 3, 1969, Ser. No. 881,841

Int. Cl. B29h *3/00, 21/00*

U.S. Cl. 425—11 **9 Claims**

Tire conditioning apparatus is provided for removing flat spots and other surface irregularities from tires preliminary to recapping or truing them. The apparatus comprises a frame, drive rolls mounted in the bottom of the frame for supporting and rotating the tire, pressure assembly arranged to press the tire against the drive rolls with a predetermined amount of pressure, and heating means located a spaced distance from the tire for heating it as it is rotated under pressure. This removes the stresses and permits the tire to assume its normal shape.



3,635,611

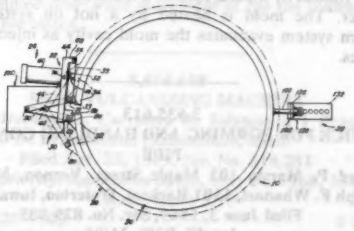
LOCKING DEVICE FOR TIRE MOLD CLAMPING BAND

William S. Mapel, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Filed Mar. 30, 1970, Ser. No. 23,589

Int. Cl. B29c *1/16*

U.S. Cl. 425—47 **17 Claims**

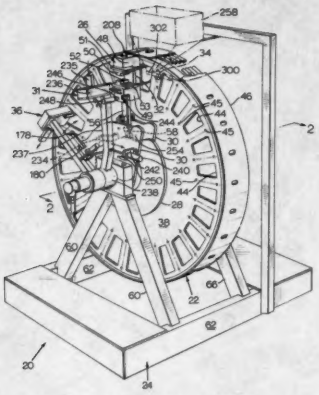


A locking device for securing a clamping band in locking engagement around a tire mold including a power cylinder assembly for opening and closing the opposite ends of the band and a guiding assembly for urging the ends of the band towards the tire mold as they are spread apart by a piston and cylinder assembly and simultaneously urging the portion of the band diagonally opposite to the ends away from the tire mold to completely disengage the band from the tire mold.

3,635,612
MOLDING MACHINE

Michael J. Fortin, Stouffville; Joseph T. Latchford, Toronto, and Marinus T. Vanden Heuvel, King City, all of Ontario, Canada, assignors to Fortin-Latchford Limited, Ontario, Canada

Filed Nov. 19, 1969, Ser. No. 878,004
Claims priority, application Canada, Oct. 29, 1969, 53008
Int. Cl. B29c 3/02
U.S. Cl. 425—60 19 Claims

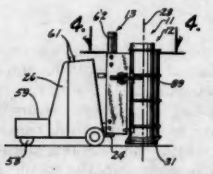


An automatic molding machine primarily for encapsulating small components. The molding machine consists of a wheel mounted for rotation, and a plurality of radially attached molding stations coupled to the wheel adjacent its periphery. Each station includes a mold cavity defined by inner and outer mold halves, and a radial cam follower cooperates with a fixed mold cam to move the inner mold half between open and closed positions. An injector piston is reciprocally journaled inside a tube in the mold cam follower. A charge of molding material is heated in the tube and upon closing the mold, a radial injector cam follower and fixed injector cam cooperate to move the piston radially outwards to inject the charge into the mold cavity. The stations are services as the wheel rotates by a parts feeder, a material feeder, and a parts stripper. The mold is heated by a hot oil system and a vacuum system evacuates the mold cavity as injection commences.

3,635,613
DEVICE FOR FORMING AND HANDLING CONCRETE PIPE

Richard P. Marsh, 103 Maple Street, Vernon, Mich., and Ralph F. Whannel, 1101 Rachael, Waterloo, Iowa

Filed June 3, 1969, Ser. No. 829,885
Int. Cl. B28b 21/00
U.S. Cl. 425—62 3 Claims

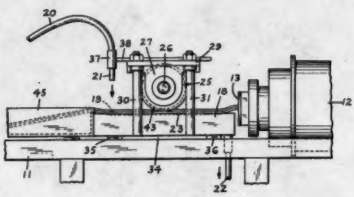


This disclosure relates to a device for forming and handling concrete pipe which is suitable for attachment to a vehicle having a lifting mechanism. The device comprises a concrete pipe mold formed in hingeably attachable, longitudinal sections and a mold handling apparatus, attachable to the lifting mechanism of the vehicle, for handling the mold and for stripping the mold from the concrete pipe. The mold is stripped from the concrete pipe by rotating two of the longitudinal mold sections about the hinges outwardly of the concrete pipe.

3,635,614
APPARATUS FOR PRODUCING EMBOSSED PLASTIC ARTICLES

Alfred R. Long, Acton, Ontario, Canada, and George A. Viehmann, New Providence, N.J., assignors to Construction Specialties, Inc., Cranford, N.J.

Original application Jan. 4, 1968, Ser. No. 695,800, now Patent No. 3,496,262. Divided and this application Nov. 14, 1969, Ser. No. 876,696
Int. Cl. B29d 7/14
U.S. Cl. 425—71 4 Claims



An apparatus for making embossed strips of extruded thermoplastic resins such as vinyl resins to close manufacturing tolerances in which heated plastic is extruded in the form of a strip with an undercut portion or rib which must be controlled closely in its cross-sectional dimensions, the rib and adjacent surfaces of the strip being cooled by immersion in a bath of liquid while the remainder of the strip, in a plastic state, is passed in contact with an embossing roll to apply a pattern to it, the entire strip thereafter being cooled by immersion in a bath of liquid to prevent flow or recovery of the plastic from marring the pattern applied by the embossing roll.

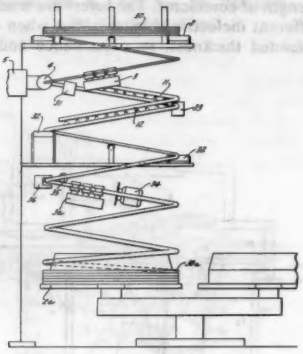
3,635,615
APPARATUS FOR JACKETING TUBULAR STOCK

Franz-Josef Hartmann, Paderdorn, and Wilhelm Lachenmayer, Berlebeck Nr. 392, both of Germany, assignors to Benteler-Werke AG, Paderborn, Germany

Filed Dec. 15, 1969, Ser. No. 884,919
Claims priority, application Germany, Dec. 16, 1968, P 18 14 886.2
Int. Cl. B29f 3/10
U.S. Cl. 425—71 14 Claims

Upper and lower advancing means advance tubular stock in downward direction and in a predetermined path which comprises at least some superimposed helical convolutions of low pitch. A feed device is arranged at the upper end of the path and a takeup device is arranged at the lower end of the path for the tubular stock. Extruding means is arranged adjacent one of the convolutions for extruding onto the outer circumferential surface of the advancing tubular stock a circumferentially complete jacket of cellular synthetic plastic. Forming means is arranged adjacent a second convolution downstream of the extruding means forming the peripheral

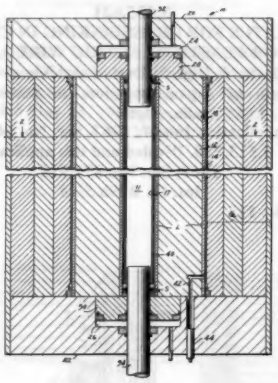
surface layer of the obtained jacket into a continuous smooth skin. Cooling means is arranged adjacent still a further convolution downstream of the forming means and cools the resulting jacketed tubular product.



3,635,616
PRESSURE VESSEL

Peruvemba Swaminathan Venkatesan, Norrisville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 18, 1969, Ser. No. 858,970
Int. Cl. B29c *3/00*; B30b *1/32*
U.S. Cl. 425—77 **28 Claims**

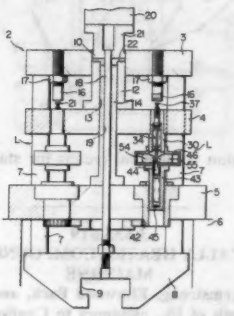


A pressure vessel providing more efficient use of constituent material for containing fluid pressurized to a predetermined operating level, and being provided with infinite cycle life. The vessel may include an array of radially disposed segmented blocks supplied with compressional axial and tangential support forces such that when the contained pressurized fluid is pressurized to its operating level, the working stress across the array of segmented blocks does not exceed the fatigue or endurance stress of the material of which the blocks are made, and/or the vessel may include a multiring assembly wherein the radial interferences between adjacent rings are chosen such that at each radius except the outermost, the working stresses are made substantially equal to each other and made equal to, or below, the fatigue or endurance stress of the material of which the rings are made.

3,635,617
PLATEN LOCKING DEVICE IN POWDERED MATERIAL COMPACTING PRESSES

Ei Hara, Tokyo, and Takashi Watanabe, Urawa, both of Japan, assignors to Tamagawa Kikai Kinzoku Kabushiki Kaisha, Tokyo-to, Japan

Filed July 14, 1970, Ser. No. 54,779
Claims priority, application Japan, Mar. 13, 1970, 45/21314
Int. Cl. B29c *3/00*; B30b *11/02, 15/00*
U.S. Cl. 425—78 **12 Claims**



In a press for compacting powdered materials into shaped articles between upper and lower punches within a cavity of a die platen, platen locking devices are provided to hold or lock a movable platen during the compacting process. Each of the locking devices comprises a wedge driving member depending from the movable platen and having a pair of downwardly converging wedging bottom end faces adapted to cooperate with a pair of oppositely arranged wedge members slidably carried on a stationary platen below said platen. The wedge members are urged toward each other by means of springs and are adapted to be locked in mutually closest positions to prevent downward movement of the wedge driving member by means of a locking key engaging or entering from below aligned bottom grooves in the wedge members. Unlocking of the device is effected by lowering the locking key to disengage it from said grooves in connection with a predetermined downward movement of the die platen above the movable platen.

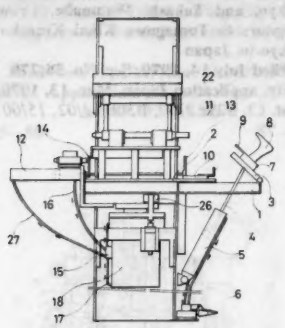
3,635,618
SHOE VULCANIZING MACHINE

Albertos Hernandez, Carretera de Salamanca 1 Pengranda, Candido De Bracamonte, (Salamanca), Spain

Filed Apr. 22, 1969, Ser. No. 818,251
Claims priority, application Spain, May 24, 1968, 354,305
Int. Cl. B29b *5/12*
U.S. Cl. 425—109 **5 Claims**

A vulcanizing machine for shoes having a frame with a last pivotally mounted upon which is mounted the upper and the vamp to be vulcanized. A mold has two movable pieces and a fixed piece in which the last is subjected to the pressure of a press during vulcanization. A guide is supported by the frame having an independent front section and a sliding base is mounted on the independent section on which the last is mounted. The base is located automatically upon the pressure plate of the press and a mounting on the slide supports the two movable pieces of the mold. Means are provided for reciprocating the mounting and movable pieces towards and away from the fixed piece which encloses the last during vulcanization. The reciprocating means includes a piston of the press for raising and placing the last at the interior of the mold. The fixed piece has recesses and engraved designs for the sole of the shoe, and the two movable pieces have en-

graved designs for the welt and projecting portions to extend into the recesses when the mold is closed. Timing means control the operation with pedal means for starting the operation.

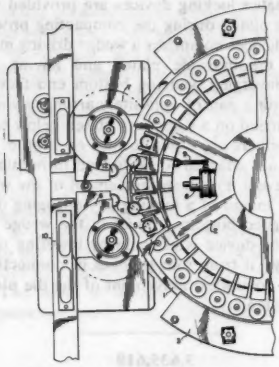


3,635,619

ELECTRICALLY HEATED COMPOUND MOLDING MACHINE

Thaddeus J. Armstrong, Elmwood Park, and Jon Ohlhaver, Deerfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 24, 1969, Ser. No. 809,898
Int. Cl. B29c *3/02*
U.S. Cl. 425—112 **10 Claims**



An electrically heated compound molding machine for molding cap liners in place. The machine has an electrically heated ring for controlling the temperature of an upper die element within narrow limits. The particular thermostat control element limits the upper die temperature to within narrow confines. Radiant heat is used to heat the lower die members.

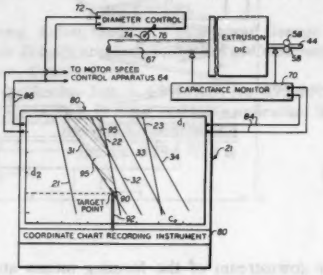
3,635,620

APPARATUS FOR CONTROLLING THE DIMENSIONS OF MULTIPLE LAYERS OF EXTRUDED INSULATION

Charles A. Brown, Newark, Del., assignor to General Cable Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 615,598, Feb. 13, 1969, now Patent No. 3,502,752. This application June 16, 1970, Ser. No. 22,188
Int. Cl. B29c *3/06*
U.S. Cl. 425—113 **7 Claims**

The dimensions of the inner and outer layers of plastic coatings, extruded over an electrical conductor, are controlled automatically in a system having a die that extrudes two layers from the same die. The control means include a monitor for the diameter of the combined coatings, and another monitor that determines the electrical capacitance per unit length of conductor. The layers are made of material having different dielectric constants, but when each layer is of the intended thickness, its capacitance and that of the combined layers have a known value so that, with the data from the monitors, graphs for existing conditions can be traced automatically adjacent to another graph of intended conditions to indicate any variations. The graph producing instrument can also be used to control automatically the thickness of the layers and the overall diameter of the coated cable.

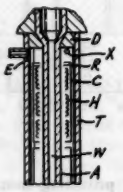


3,635,621

APPARATUS FOR CROSSLINKING IN CURABLE RUBBER OR PLASTIC ELECTRIC WIRE AND CABLE

Hirokazu Miyauchi, Higashi Osaka, and Yasuo Wakabayashi, Settsu, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Original application June 7, 1967, Ser. No. 644,329, now Patent No. 3,513,228. Divided and this application Oct. 28, 1969, Ser. No. 871,912
Int. Cl. B29h *5/28*
U.S. Cl. 425—113 **5 Claims**



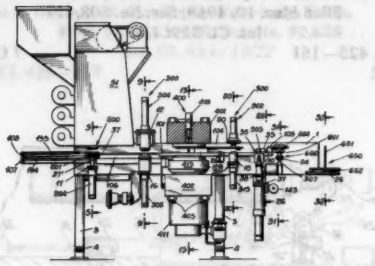
An apparatus for curing an insulated conductor which consists basically of a treating chamber sealed from ambient atmosphere and which is divided respectively into a radiant heating zone, a precooling zone and a liquid cooling zone, through which the covered conductor is sequentially passed. The radiant heating zone and the precooling zone are supplied with an inert gas atmosphere under pressure.

3,635,622

AUTOMATIC RECORD PRESS

Paul H. Wechsler, Glendale, Calif., assignor to Capitol Records, Inc., Hollywood, Calif.

Filed Jan. 8, 1969, Ser. No. 789,829
Int. Cl. B29d *17/00*
U.S. Cl. 425—116 5 Claims



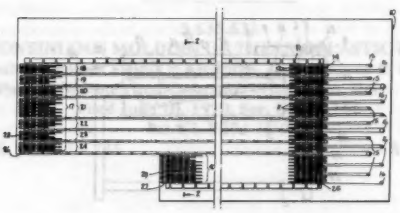
There is disclosed a machine for manufacturing articles requiring a plurality of successive operations. The machine includes a plurality of work stations equidistantly spaced from each other in the line of progression of the successive operation and each work station is equipped with operation performing instrumentalities suitable for those particular stations. A reciprocable workpiece transport means periodically and simultaneously transports all workpieces in their various stages of completion to the next work station so that at each cycle of operation the machine is performing the required operations on a plurality of articles. The illustrated embodiment is a machine for the automatic production of phonograph records.

3,635,623

MOLD FOR GLOVE HEATER

Mark W. Olson, Allendale, and Walter F. Silva, Riverdale, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 23, 1969, Ser. No. 827,209
Int. Cl. B29d *3/00*
U.S. Cl. 425—123 3 Claims



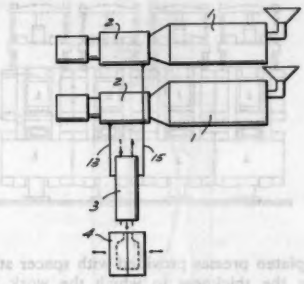
An electrical heater, a mold for making the heater and the method of making the heater. The heater comprises a flexible lattice structure of plastic material having an electrical heater wire embedded therein for heating the hand and the finger regions of a glove. The mold comprises a base with ribs and grooves for molding plastic material in the grooves and with pins for positioning electrical heater wire in the grooves. The method comprises moving portions of a sheet of plastic material into the grooves of the mold, positioning a heater member in the grooves and moving portions of a second sheet of plastic material into the grooves. The heater has the advantage of uniformly heating the hand and uniformly heating the fingers, and of being flexible, durable and reliable.

3,635,624

BLOW-MOLDING APPARATUS

Yoshio Nakakoshi, No. 9-1, 5-chome, Minamiaoyama, Minato-ku, Tokyo, and Senkichi Nakakoshi, No. 1-7-403, 1-chome, Sakurajosvi, Setagaya-ku, Tokyo, both of Japan

Filed Aug. 29, 1969, Ser. No. 854,065
Claims priority, application Japan, Oct. 22, 1968, 43/76527
Int. Cl. B29c *5/08*
U.S. Cl. 425—133 3 Claims



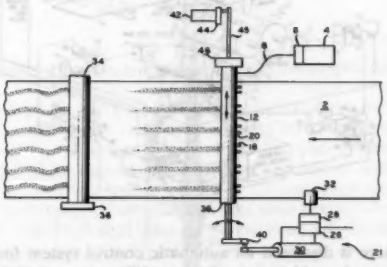
A blow-molding apparatus involving a die, an annular port for delivering material formed in the lower portion of said die, a first annular feeding passage formed in said annular port at the inside, a second annular feeding passage formed in said die in a manner to communicate with said annular port at the outside, a heat-resistant barrier coaxially disposed between said feeding passages, and means for full heating of the material in the respective feeding passages. The synthetic resinous material in the feeding passages are of various or different kinds.

3,635,625

APPARATUS FOR CARVING A MATERIAL SHEET

Raymond G. Voss, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 12, 1970, Ser. No. 2,312
Int. Cl. B29c *23/00*
U.S. Cl. 425—135 6 Claims



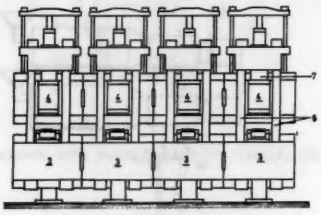
An apparatus for passing heated fluid onto a material sheet and moving said fluid along the sheet to carve a pathway on said sheet.

3,635,626

HEATING PLATEN PRESS

Heinrich Pfeiffer, Eppingen Baden, Germany, assignor to F. Dieffenbacher, GmbH Maschinenfabrik, Eppingen Baden, Germany

Filed Oct. 25, 1968, Ser. No. 770,526
Claims priority, application Germany, Oct. 28, 1967, P 16 53 186.5
Int. Cl. B29c 3/06
U.S. Cl. 425—136 14 Claims



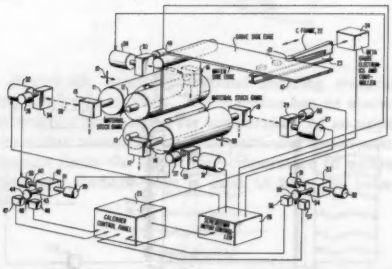
Heating platen presses provided with spacer structure for determining the thickness to which the work material is pressed. Such platen press normally includes a stationary base and a movable press assembly coacting with the base to compress the work material. In order to determine the thickness to which the work material is compressed, so as to form chipboard, shavings board, fiberboard, or other composition board of selected thickness, spacer means of a suitable thickness is provided. In order that there may be no error in the use of a particular spacer means a testing means is provided for testing the thickness of the particular spacer means which is used.

3,635,627

CALENDER SHEETING THICKNESS CORRECTION CONTROL SYSTEM

Franklin E. Palmer, 4821 Ranchwood Road, Akron, Ohio

Filed Sept. 5, 1969, Ser. No. 855,482
Int. Cl. B29c 3/06
U.S. Cl. 425—141 7 Claims



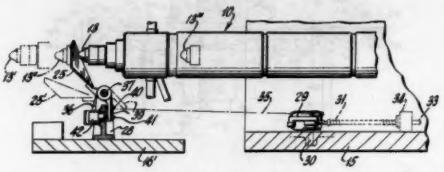
There is disclosed an automatic control system for maintaining the thickness of a multilayer or multilaminae flowsheet of rubber or plastic material. The system includes a plurality of screwdown motors for controlling calender roll separation and a plurality of selsyn systems responsive to screwdown movement and connected in a feedback control system to selectively deenergize the screwdown motors to control correction of laminae thickness. The laminae thickness feedback control system is operable with a beta gauge sheet thickness maintenance control, where the latter control operates to maintain total sheet thickness at a predetermined value.

3,635,628

PURGING GUARD FOR PLASTICS INJECTION-MOLDING MACHINES

Francis W. Cook, Jr., Newington, Conn., assignor to The New Britain Machine Company, New Britain, Conn.

Filed Mar. 19, 1969, Ser. No. 808,417
Int. Cl. B29f 1/03
U.S. Cl. 425—151 7 Claims



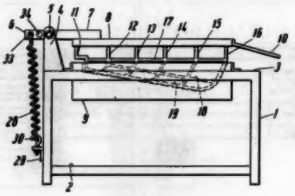
In a plastics injection-molding machine, wherein injection mechanism is reciprocated into and out of a mold-injection position, the invention provides a protective guard which is movable, as by pivot action, into and out of the path of the nozzle of the injector mechanism. The reciprocation of the injector and the movement of the guard are coordinated so as to place the guard in front of the nozzle when the injector is retracted from molding position.

3,635,629

DEVICE FOR MANUFACTURING SHAPED ARTICLES FROM FABRIC SECTIONS

Benno Saladin, Sirnach, Switzerland, assignor to Saladin A.G., Switzerland

Filed Jan. 27, 1969, Ser. No. 793,978
Claims priority, application Germany, Apr. 1, 1968, P 17 78 135.0
Int. Cl. B29c 17/04
U.S. Cl. 425—173 7 Claims



A shaped article, such as a floor covering for a vehicle, is made from a plurality of interconnected sections of fabric having a pile and including a thermosetting or thermoplastic plastics material. During forming of the article on a two-part press, in order to prevent the pile from being flattened, the pile surface of the joined together and properly oriented sections is engaged by a gridlike press part only in the regions of the joints between the section. The press includes a trough-shaped receiving press part and a pivotally mounted top press part which is movable to engage over the article which is positioned in the trough-shaped part. The top press part is favored as a grid with projecting portions such as tubes which engage the article being formed at least at the junctures of

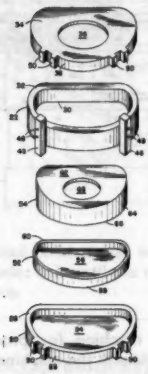
sections or portions of the article which are to be arranged at an angle to one or more other portions. The tubes advantageously carry means for selectively cooling or heating the article to apply a desired thermal treatment for permanently forming the article.

3,635,630

DENTURE MOLDING APPARATUS INCLUDING FLASK MEMBERS WITH REMOVABLE PLASTIC INSERTS

James S. Greene, 49 Gail Drive, Waterbury, Conn.

Filed Apr. 28, 1970, Ser. No. 32,625
Int. Cl. A61c *13/22*
U.S. Cl. 425—175 5 Claims



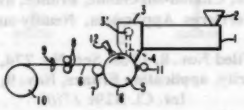
Apparatus and method for forming dentures wherein plastic inserts are placed within metal flask members to hold a dental mold therein. Acrylic plastic is then inserted in place of the mold to form the denture within the plastic inserts, the insert unit is then removed from the metal flask and held by plastic clamping means, and the plastic denture cured in an ultrahigh frequency oven.

3,635,631

CONTINUOUS MOLDING OF THERMOPLASTIC RESIN

Reuben Thomas Fields, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 10, 1970, Ser. No. 45,166
Int. Cl. B29d *7/10*
U.S. Cl. 425—223 8 Claims



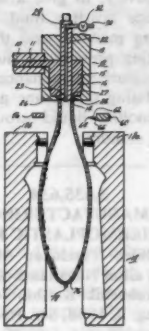
Molten thermoplastic resin, e.g., polyethylene is forced into a pattern on the surface of a rotating roll to form a web of the resin, the resin being forced into the pattern through a die having a zigzag upstream edge.

3,635,632

APPARATUS FOR BLOW MOLDING PLASTIC ARTICLES

Charles H. Shaw, Bloomfield, and Robert G. Strauss, West Hartford, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Original application Oct. 17, 1966, Ser. No. 587,255. Divided and this application Apr. 10, 1969, Ser. No. 839,745
Int. Cl. B29d *23/03*
U.S. Cl. 425—297 2 Claims



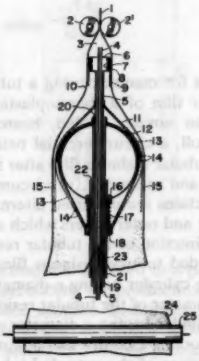
An apparatus for blow molding articles by preinflating a tubular parison prior to final expansion within the blow mold. The apparatus includes a clamping assembly for sealing a leading end of the extruding parison, and a specially configured mandrel tip which is axially movable against a shoulder in the extrusion head to at least partially sever the parison situated therebetween after preinflation.

3,635,633

APPARATUS FOR BIAXIALLY STRETCHING A TUBULAR FILM

Masahide Yazawa, and Setsuya Tsuyama, both of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Oct. 8, 1970, Ser. No. 79,186
Claims priority, application Japan, Nov. 26, 1969, 44/94776
Int. Cl. B29d *7/24, 23/00*
U.S. Cl. 425—302 4 Claims



An apparatus for biaxially stretching a tubular film, by the use of a heated pressurized fluid supplied in the inside of the

expanding tubular film and allowing to leak a part of the fluid through a thin layer clearance between the expanded tubular film and an inserted mandrel at the outside thereof and the difference of speeds between the feed side and takeup side, which is characterized by cylindrical nets of variable diameter, whose upper ends are fixed and on which a positive tension is applied vertically downwards, and which are provided at a leakage section of a heating pressurized fluid filling a thin layer clearance between the outer periphery of an umbrellalike insulating membrane and an expanded tubular film and at the discharge section of a cooling liquid along the outer periphery of an inserted bag mandrel and the expanded tubular film, respectively, to give a uniform and sufficient discharging resistance to the fluid at the entire outer periphery of the bag mandrel and thereby to reduce the leakage of the heating pressurized fluid, and to attain the facilitation of the pressure maintenance in the stretching section above the insulating membrane as well as the uniform discharge of the cooling liquid around the entire outer periphery of the bag mandrel.

3,635,634

APPARATUS FOR MANUFACTURING TUBULAR FILMS OF THERMOPLASTIC RESINS

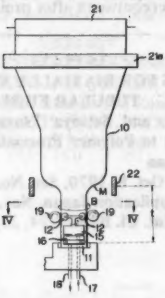
Hiroshi Nagano; Hideo Tomioka; Akira Yamataka, and Hirohiko Yoshida, all of Nagahama-shi, Japan, assignors to Mitsubishi Jushi Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 5, 1968, Ser. No. 750,036

Claims priority, application Japan, Nov. 13, 1967, 42/72587; Aug. 11, 1967, 42/51185; Oct. 12, 1967, 42/65203

Int. Cl. B29d *23/04*

U.S. Cl. 425– 325 **2 Claims**



In an apparatus for manufacturing a tubular resinous film wherein a tubular film of a thermoplastic film is extruded from an extrusion nozzle, cooled, heated, expanded and wrapped into a roll, a circumferential twist is intermittently imparted to the tubular resinous film after it is cooled but before it is heated and expanded, or circumferential twists in the opposite directions are imparted alternately, by means of cooperating inner and outer rollers which are revolved in the circumferential direction of the tubular resinous film. Means to cool the extruded tubular resinous film comprises a first stationary cooling cylinder having a diameter slightly smaller than the inner diameter of the tubular resinous film, a second rotary cooling cylinder having a diameter slightly larger than that of the first cooling cylinder and adapted to contact and cool the inner surface of the extruded tubular resinous film, and means to form a layer of cooling gas between the inner surface of the extruded tubular resinous film and the periphery of the first cooling cylinder.

3,635,635

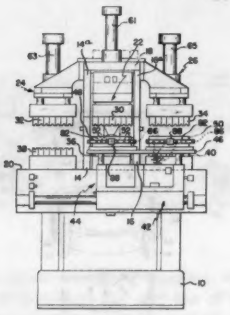
BLOW MOLDING MACHINE WITH PRESSURE MEANS FOR HOLDING NECK AND BODY MOLD SECTIONS TIGHTLY TOGETHER DURING MOLDING OPERATIONS

Ernest P. Moslo, 12700 Lake Avenue, Lakewood, Ohio

Filed June 11, 1970, Ser. No. 45,437

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 **12 Claims**



A blow molding machine for producing for instance, plastic bottles, and wherein the machine molds the bottles on horizontally arranged parison and blow molds comprising a central parison mold and a pair of blow molds disposed generally on either side of the parison mold. The molds comprise upper and lower neck section mold halves and upper and lower body section mold halves with the halves being relatively movable with respect to one another for opening and closing the molds in a general vertical direction. The mold halves when closed define the mold cavity of the respective mold, and the neck mold sections are adapted for longitudinal abutting relation with the body sections during molding operations. Pressure-applying means are provided coacting with the mold sections to urge the latter longitudinally together for maintaining a tight abutting relationship between the neck mold sections and the body mold sections in the closed condition of the molds, so that leakage can not occur between the body and neck mold sections, while providing in the deactuated condition of the pressure-applying means, for ready opening and closing movement of the mold sections without interference between the neck mold sections and the body mold sections.

3,635,636

APPARATUS FOR FORMING HOLLOW BODIES

Serge Lagoutte, Chalon-sur-Saone, France, assignor to Societe d'Etudes Verrieres Appliquees, Neuilly-sur-Seine, (Seine), France

Filed Nov. 8, 1968, Ser. No. 774,385

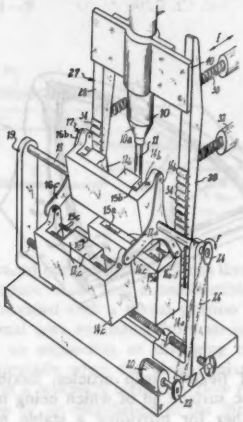
Claims priority, application France, Nov. 9, 1967, 127539

Int. Cl. B29c *17/07*

U.S. Cl. 425—326 **3 Claims**

Hollow bodies such as bottles are blow molded from tubular plastic material produced along an axis defined in an extruder therefor. A plurality of molds supported on a mold carrier are driven by that carrier successively through a closed path which intersects that axis. As each mold is carried to the position where it intersects the axis of the extruder, the mold closes on a section of the plastic material to

permit blowing thereof to the shape defined by the mold. At this time moreover that mold engages against an abutment fixed with respect to the extruder and imposes a relative motion on the extruder and mold carrier which holds that mold coaxial with the extruder axis until the next mold comes into coaxiality with that axis.

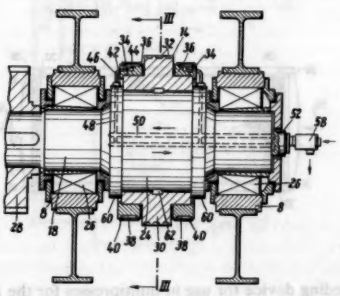


3,635,637

SEGMENTED ROLLER BRIQUETTE PRESS WITH COOLED MOUNTING RINGS

Hans-Georg Bergendahl, Langehorst 23, Hattingen (Ruhr), Germany

Filed June 2, 1970, Ser. No. 42,695
Claims priority, application Germany, June 3, 1969, P 19 28 176.6
Int. Cl. B29c *3/02*
U.S. Cl. 425—363 **8 Claims**



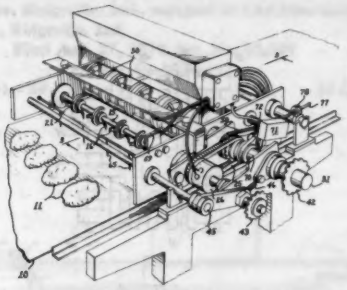
An improved roller-type briquette press for the hot pressing of coal, ores and similar substances, wherein a cylindrical roller core carries a plurality of segments, equipped with molds and forming together an annulus, wherein the improvement comprises that the segments may be easily and reliably mounted on the valve core even at the high temperatures encountered during the pressing by using cooled, shrunk fit mounting rings.

3,635,638

ROLL-FORMING MACHINE

William Roy Bryan, Glendale, Ariz., assignor to H. B. P. Manufacturing Incorporated

Filed Jan. 9, 1970, Ser. No. 1,802
Int. Cl. A21c *11/04*
U.S. Cl. 425—373 **9 Claims**



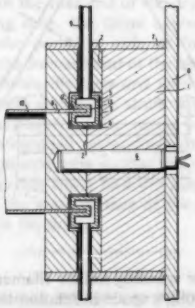
A machine is provided for attachment to a conveyor system utilized to transport raw dough rolls. A stop gate is movably positioned in the path of the rolls and, when placed in an interfering position, temporarily stop the rolls while the rolls maintain sliding contact with the conveyor. A roll imprinting drum is positioned above the conveyor and adjacent the stop gate; the stop gate is subsequently moved to a noninterfering position to permit the rolls to pass to the imprinting drums where the rolls are formed into a desired shape.

3,635,639

HEATING APPARATUS FOR PRODUCING FORM CONFIGURATIONS IN TUBULAR PIECES

Friedhelm Krebsbach, Troisdorf; Gerhard Osterhagen, Driesch near Eltorf, and Gunter Oettel, Siegburg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Dec. 24, 1968, Ser. No. 786,701
Claims priority, application Germany, Dec. 20, 1967, P 17 04 011.8
Int. Cl. B29b *3/00*
U.S. Cl. 425—384 **20 Claims**



The present disclosure is directed to a process and a heating apparatus for permitting the production of crimped, compressed, and beaded sections in tubular pieces made of a synthetic material which comprises a means adapted to receive a tubular piece, said means provided with a heating means for selectively heating a portion of said tubular pieces and cooling means associated with at least one of the marginal areas surrounding said heated portion thereby preventing distortion of the tubular pieces in said marginal areas.

3,635,640
APPARATUS FOR STRETCHING SHEET MATERIAL

Edward C. Wood, Portola Valley, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

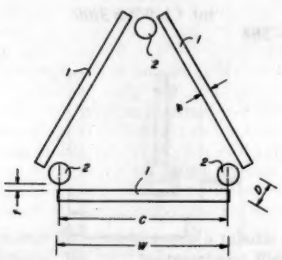
Filed Oct. 17, 1968, Ser. No. 768,245
Int. Cl. B29c *17/02*; D06c *3/08*
U.S. Cl. 425—445 10 Claims

A sheet material stretching arrangement having a plurality of clamps holding the sheet, wherein the clamps are spaced and shaped so as to achieve substantially maximum recovery of usable stretched material. By the use of properly spaced, elongated clamping surfaces, of the order of 85 percent of the stretched material may be substantially undistorted and usable.

3,635,641
SPINNERETTE FOR PRODUCING HOLLOW FILAMENTS

Garland L. Turner, Chesterfield County, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,806
Int. Cl. D01d *3/00*
U.S. Cl. 425—461 8 Claims

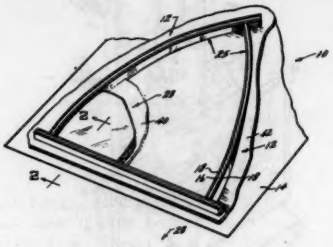


A spinnerette for spinning hollow filaments having a maximum amount of hollow space in relation to the outer dimensions of said filaments. The filaments are extruded from a group of preferably three slots and corresponding three round openings or dots. The polymer occluding area defined by the arrangement of the slots forms substantially an equilateral triangle. The round openings are arranged near or at the ends of the slots, but not in communication with the slots. Filaments melt spun from the nested embodiment of this spinnerette consistently have above 35 percent hollow space. The spinnerette is much less subject to breakage than similar designs. Specific parameters for spinning with such an orifice configuration are set forth.

3,635,642
MOLDING DEVICE

Ralph C. Mueller, 7000 Summit Avenue, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 709,548, Mar. 1, 1968, now Patent No. 3,530,540. This application Sept. 28, 1970, Ser. No. 76,136
Int. Cl. B29c *1/00*
U.S. Cl. 425—470 4 Claims

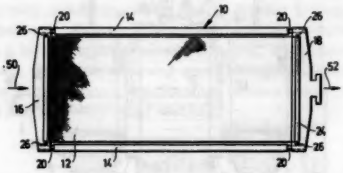


An assembly of flexible strip articles, flexible metallic bands, and metallic surface all of which being magnetically fixedly held together for providing a stable molding apparatus about a form. One of the strip articles of the assembly comprises an elongated strip of magnetic material sandwiched between a pair of coextensively extending metal members one of which may include a base flange. An additional strip article composed of the magnetic material may be included as part of the assembly. The metallic bands are magnetically secured to the first strip article which in turn is magnetically secured to the metallic surface whereby such assembly constitutes a molding device.

3,635,643
FEEDING DEVICE FOR SHEET AND PLANULAR BLANKS IN MULTILAYER PRESSES

Rolf Bertil Reinhall, Lidingo, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Filed June 23, 1966, Ser. No. 559,854
Claims priority, application Sweden, Feb. 10, 1966, 1720/66
Int. Cl. B29g *7/02*; B29c *3/04*
U.S. Cl. 425—470 2 Claims



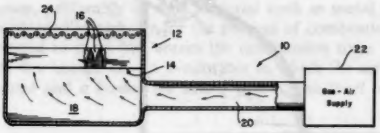
A feeding device for use in multipresses for the production of sheets or boards of fibrous vegetable material by pressure between superimposed press plates. The sheet or board blank is pressed between flexible foraminous metallic sheets such as sheets of wire cloth which are individually stretched in frames and held in their stretched condition therein while being inserted between the press plates; the frames being each of such dimensions as to be located outside of the press plates so that pressure is not imposed on them and they receive a minimum of heat during the pressing operation and the flexible metallic sheets being secured in the frame only at the opposite ends of the frame.

3,635,644

INFRARED BURNER AND METHOD OF INCREASING THE HEAT FLUX RADIATED THEREFROM

Edward A. Reid, Jr., Columbus, Ohio, assignor to Columbia Gas System Service Corporation, New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,943
Int. Cl. F23d *13/36*
U.S. Cl. 431—9 **4 Claims**



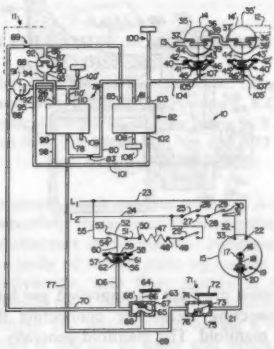
In an infrared burner having orifices through which a combustible mixture of air and a combustible gas passes, each orifice is provided with a throat portion of relatively small cross-sectional area extending from an inlet for the air-gas mixture to an expanding or diverging outlet portion into which, particularly when the air-gas mixture is supplied to the burner at a relatively high-mass flow rate, a substantially laminar flow or jet established in the throat portion of the orifice is projected centrally and separates from the surface of the diverging outlet portion to create a turbulent recirculating flow around the laminar flow or jet for substantially increasing the infrared radiation produced by the burner when the air-gas mixture is ignited within such outlet portion.

3,635,645

PNEUMATIC CONTROL SYSTEM FOR A FUEL-BURNING APPARATUS OR THE LIKE

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 26, 1970, Ser. No. 5,709
Int. Cl. F23n *5/00*
U.S. Cl. 431—67 **8 Claims**



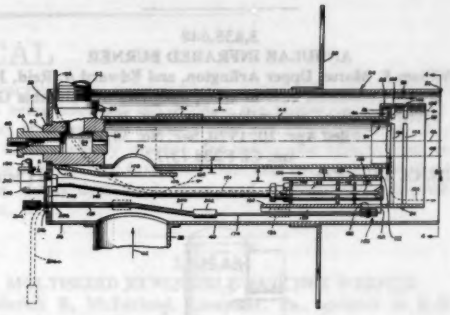
This disclosure relates to a pneumatic control system for a clothes dryer wherein the flow of fuel to the main burner means is pneumatically controlled in such a manner that the ignition means for the main burner means must be first pneumatically actuated before the pneumatic control system will pneumatically open the fuel supply means to the main burner means, the control system including a pneumatically operated logic "memory" unit to assure that the ignition means is always pneumatically operated before the main burner can be pneumatically operated to its on condition by a pneumatically operated NAND unit each time there is a requirement to turn on the main burner means. The "memory" unit is prevented from transmitting atmosphere therethrough when being switched by its setting signal.

3,635,646

GAS BURNER

Paul D. Cox, Ridgeville, Ind., assignor to Cox Manufacturing Co., Inc., Ridgeville, Ind.

Filed Aug. 27, 1970, Ser. No. 67,307
Int. Cl. F23n
U.S. Cl. 431—89 **14 Claims**



A gas burner of the type having a blast tube and a blower for supplying air to the blast tube adjacent its rear end. A gas and air mixing tube is longitudinally supported in the blast tube with its forward end spaced rearwardly from the forward end of the blast tube, and a nozzle injects gas into the rear end of the mixing tube. The mixing tube has an air inlet opening adjacent its rear end for admitting primary air thereto for forward flow therein and mixture with the gas, the secondary air flowing forwardly over and around the mixing tube. The relationship of the primary and secondary airflow is controlled by a gate for selectively varying the area of the air inlet opening in the mixing tube. A burner drum is mounted in the forward end of the blast tube by a partition extending between the rear end of the drum and the forward end of the mixing tube, the drum extending longitudinally forwardly from the partition with its forward end spaced rearwardly from the forward end of the blast tube, the secondary air flowing forwardly over and around the drum and a flame being formed within the drum upon ignition of the fuel-air mixture exiting from the mixing tube. The drum has elongated, circumferentially extending slots formed in its wall forwardly of the mixing tube so that the secondary air flowing forwardly over the drum and the slots creates a partial vacuum adjacent the inner surface of the drum wall so as to spread the flame in the drum.

3,635,647

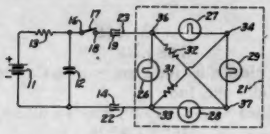
ELECTRICAL RESISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Sang-chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company

Filed June 3, 1970, Ser. No. 42,952
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **14 Claims**

A simplified resistance-type of circuit for causing sequential flashing of photoflash lamps from firing pulses of electrical energy. The basic circuit consists of four flashlamps connected in series in a closed electrical loop. Two resistors are connected "crisscross" between diagonally opposite lamp

junctions of the series loop, and the circuit is adapted for connection to a source of firing pulses across one of the



flashlamps. Circuit modifications are disclosed for different numbers of flashlamps.

3,635,648

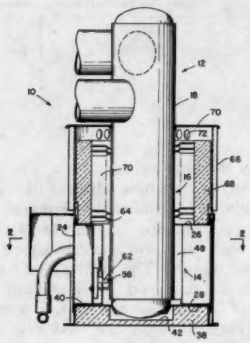
ANNULAR INFRARED BURNER

William F. Morse, Upper Arlington, and Edward A. Reid, Jr., North Columbus, both of Ohio, assignors to Columbia Gas System Service Corporation, New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 30,102

Int. Cl. F23d *13/12*

U.S. Cl. 431—170 **8 Claims**



An annular gas heating unit which surrounds the peripheral sidewall of the generator unit in an air-conditioning system to provide radiant heat to the generator. A combustible gas mixture is introduced tangentially into two separate plenum chambers of the heating unit to create a generally circular flow of gas therein to provide an even distribution of gas within the combustion chamber of the unit. The products of combustion are discharged through an annular exhaust section which also surrounds the generator unit of the air-conditioning system to provide additional heat by conduction and convection heat transfer to the generator unit.

3,635,649

DEPENDABLE PERFORMANCE IGNITER

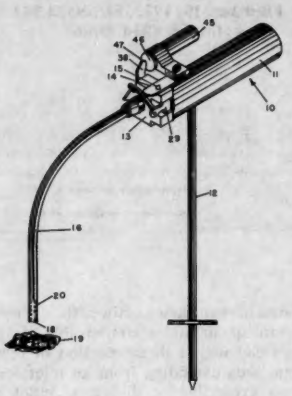
Robert S. Kafka, Maitland, Fla., assignor to Paul B. Tweed and Andrew T. Lance, part interest to each

Filed Oct. 27, 1969, Ser. No. 869,503

Int. Cl. F23q *1/06*

U.S. Cl. 431—269 **22 Claims**

An igniter such as may be utilized in agriculture for providing abundant quantities of hot gas and/or hot particles to ignite burners and/or combustible material in the event of low temperature. Involved are a novel cartridge-containing housing and easily operated breech mechanism, with the cartridge arranged to be fired in a very dependable and repeatable manner at such time as freezing temperatures have caused an elongation of an actuator associated with the cartridge-triggering mechanism. Alternatively, the actuator for causing a



triggering of the cartridge may be caused to elongate by fuel pressure being supplied to the burners to be ignited by the igniters.

3,635,650

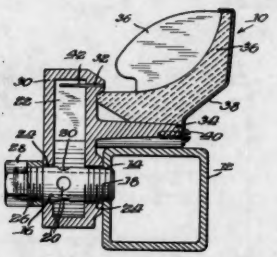
MOUNTING MEANS FOR GAS BURNER

Carlo A. Lentini, La Grange, Ill., assignor to X-trad Corporation, La Grange, Ill.

Filed Aug. 17, 1970, Ser. No. 64,492

Int. Cl. F23q *9/00*

U.S. Cl. 431—278 **10 Claims**



The invention provides an improved gas burner assembly and gas-connecting means for connecting the burner assembly to a manifold. The manifold generally has a plurality of gas outlet openings, each of which has an outwardly projecting gas delivery pipe connected thereto. Each gas delivery pipe has a gas delivery opening in the side. The burner assembly has a gas plenum chamber with axially aligned apertures in opposite sides, through which the gas delivery pipe is passed. When the gas delivery pipe is passed through the apertures, the gas delivery opening communicates with the plenum chamber. Attaching means is also provided for attaching the gas delivery pipe to the burner unit, and for preventing leakage of gas to the atmosphere. In one embodiment, the invention includes valve means on the gas delivery pipes, which permit the burner units to be individually adjusted.

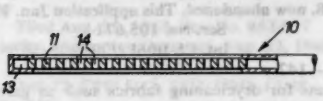
3,635,651

BURNER

Denis Henry Desty, Weybridge, England, assignor to The British Petroleum Company Limited, Moor Lane, London, England

Filed Mar. 31, 1970, Ser. No. 24,221
Claims priority, application Great Britain, Apr. 28, 1969, 21,541/69
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **13 Claims**

A burner, preferably of rigid material such as metal foam which is pierced by airholes for the passage of combustion air and arranged to carry fuel across the combustion zone. Conveniently the burner has an evaporator in which the airholes are situated and a feeder for lifting fuel to the level of the evaporator. In the preferred configuration gravity assists fuel transfer. For example, the evaporator comprises two sloping



portions joined together at their lowest portions and each joined to a feeder at its highest portion.

CHEMICAL

3,635,652

PROCESS FOR DYEING POLYURETHANE FOAM IN NONAQUEOUS DYE BATH

Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed July 5, 1968, Ser. No. 742,523
Int. Cl. D06p *3/24*
U.S. Cl. 8—4 **6 Claims**

A composition of matter comprising polyurethane foams and articles foamed therefrom, having applied thereto an essentially water-insoluble dyestuff of the class known as spirit or solvent-soluble dyestuffs; particularly those dyestuffs of this class which are formed by the reaction of water-soluble dyes which contain water-solubilizing sulfonic or carboxylic acid groups with water-insoluble amines which are free from such solubilizing groups. In addition to the amine-salt-type of spirit or solvent-soluble dyestuffs, the metallized O,O'-dihydroxy azo-type of spirit or solvent soluble-dyestuffs may be used. The invention is also concerned with a method for the production of dyed polyurethane foams which comprises applying to the polyurethane foam or article a solution of a water-insoluble, spirit or solvent-soluble dyestuff in a volatile organic solvent.

3,635,653

POLYESTER POLYAMIDE BLEND FIBER DYED WITH AZO DISPERSE DYE

Orville E. Snider, Petersburg, Va.; James E. Loughlin, Charlotte, N.C., and Hans Ortheil, Spartanburg, S.C., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 13, 1967, Ser. No. 682,572
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 **8 Claims**

Fibers are prepared which are comprised of 4–50 parts by weight of a substantially linear fiber-forming polyester having recurring cyclic structure in the polymer backbone dispersed in a continuous body of 50–96 parts by weight of a linear fiber-forming polyamide, said fiber having at least 5,000 polyester microfibrils per 1,000 square microns cross section and is dyed with an azo disperse dye having a solubility of less than 0.1 gram is 100 cc. of water and which has an apparent electron affinity of greater than 3 electron volts, said azo disperse dye having one or more electron attracting substituent moieties, and there may be simultaneously present electron repelling substituent moieties, provided the sum of the charges of the electron attracting moieties are at least 0.5 electron volts greater than the sum of the electron repelling moieties. The fibers may be blended with other fibers to form fabrics having novel effects.

A process for producing said dyed polyblend fibers or fabric therefrom comprising dyeing in an aqueous medium at a temperature of at least 150° F. as the sole fiber in the textile article or in combination with at least one other fiber selected from the group consisting of polyamide, polyester, polyacrylonitrile, polypropylene, cotton, silk and wool, said dye being solely an azo disperse dye having an electron affinity of at least 3.0 electron volts and alternately there may be simultaneously present, for multicolor effects, one or more dyes selected from the group, acid dyes, acid metallized dyes, direct dyes, basic dyes, and anthraquinone disperse dyes.

3,635,654

MULTISIZED REVERSIBLE RATCHET WRENCH

Frederick R. McFarland, Lancaster, Pa., assignor to K-D Manufacturing Company, Lancaster, Pa.

Filed Dec. 8, 1969, Ser. No. 883,199
Int. Cl. B25b *13/46*
U.S. Cl. 81—63 **1 Claim**

A ratchet wrench is provided, with sockets at each end, wherein a novel ratchet arrangement permits an increased number of permanent nut-receiving sockets.

3,635,655

MINERAL TANNED LEATHER TREATED WITH DIALDEHYDE STARCH AND BENZENE POLYCARBOXYLIC ACID COMPOSITIONS

Richard Nathan Williams, Sloatsburg, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 15, 1968, Ser. No. 705,634
Int. Cl. C14c *3/28*
U.S. Cl. 8—94.26 **8 Claims**

Mineral tanned leather is stabilized against degradation due to warm or hot alkaline washings by applying thereto during tanning or retanning an aqueous solution of from about 5 parts to about 1 part dialdehyde starch and from about 1 part to about 5 parts of a benzene polycarboxylic acid or alkali metal salt thereof based on the weight of the leather. A 5 percent solution based on the weight of the hide of a 1:1 composition of dialdehyde starch and sodium isophthalate is preferred.

ERRATUM

For Class 8—142 see:
Patent No. 3,635,667

3,635,656

DRYCLEANING METHOD

Joseph A. Piepmeyer, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Continuation-in-part of application Ser. No. 717,466, Mar. 29, 1968, now abandoned. This application Jan. 11, 1971, Ser. No. 105,671

Int. Cl. D06l *1/00*

U.S. Cl. 8—142 13 Claims

A process for drycleaning fabrics such as garments and other drycleanable materials, particularly highly soiled garments, by using hydrocarbon and chlorinated hydrocarbon solvents. The process includes a plurality of phases in a cleaning cycle wherein soiled garments are agitated in drycleaning solvent in each of the phases by mixing the solvent of a first phase with a detergent having a substantivity for the garments, removing the solvent of the first phase from the garments while the detergent is substantively retained by the garments and combining the solvent of a second phase with the garments containing the detergent for continued cleaning.

3,635,657

PROCESS FOR THE REMOVAL OF NITRIC OXIDE FROM INDUSTRIAL GASES

Giancarlo Bressan, Milan, and Salvatore Gafa, Ferrara, both of Italy, assignors to Monlecatini Edison S.p.A., Milan, Italy

Filed Aug. 29, 1969, Ser. No. 854,319

Claims priority, application Italy, Aug. 31, 1968, 20709 A/68

Int. Cl. B01d *53/34*

U.S. Cl. 23—2 R 13 Claims

Nitric oxide is removed from industrial gases, more particularly from gases formed in the cracking of hydrocarbons, by absorption in an aqueous solution containing at least one ferrous salt, at least one ammonia salt and free ammonia, under conditions such that the nitric oxide, which is usually present in the cracking gases in an amount of 50 to 200 p.p.m., is either totally removed or reduced to less than 0.5 to 1.0 p.p.m., in a single stage or step.

3,635,658

RARE EARTH OXIDE PROCESS

John L. Ferri, Towanda, and James E. Mathers, Ulster, both of Pa., assignors to Sylvania Electric Products, Inc.

Filed Apr. 2, 1969, Ser. No. 812,913

Int. Cl. C22b *59/00*

U.S. Cl. 23—19 R 8 Claims

A process for increasing the particle size of rare earth oxides is disclosed comprising: forming an aqueous mineral acid solution containing a rare earth source dissolved therein, reacting the rare earths in said solution with oxalic acid to form an insoluble rare earth oxalate, separating the rare earth oxalate from the reaction medium, contacting the rare earth oxalate with an aqueous oxalic acid solution having a concentration of oxalic acid of from about 1 to about 40 percent by weight and heating the rare earth oxalate to a sufficient temperature and time to convert said rare earth oxalates into rare earth oxides having a particle size of at least 3 microns.

3,635,659

PROCESS FOR THE PRODUCTION OF $(NH_4)_3AlF_6$

Gustave E. Kidde, 294 California Terrace, Pasadena, Calif.

Continuation-in-part of application Ser. No. 839,096, July 3, 1969, now abandoned, Continuation-in-part of application Ser. No. 575,205, July 18, 1966, now abandoned, Continuation-in-part of application Ser. No. 483,241, Aug. 27, 1965, now abandoned, Continuation-in-part of application Ser. No. 328,126, Dec. 4, 1963, now abandoned. This application Mar. 25, 1970, Ser. No. 22,671

Int. Cl. C01f *7/50*; C01c *1/16*

U.S. Cl. 23—88 1 Claim

This invention relates to a process for the production of $(NH_4)_3AlF_6$, comprising reacting together hydrated alumina and a compound selected from the group consisting of ammonium bifluoride and ammonium fluoride and recovering $(NH_4)_3AlF_6$.

3,635,660

PHOSPHATE AND PHOSPHORS PREPARED THEREFROM

Joseph A. G. Bruce; Henry M. Levy, and Pyliss Oborn, all of London, England, assignors to Thorn Electrical Industries Limited, London, England

Filed Feb. 5, 1969, Ser. No. 796,813

Int. Cl. C01b *25/32*; C09k *1/36*

U.S. Cl. 23—108 1 Claim

A new form of γ—calcium pyrophosphate having a rhambohedral crystal shape and regular particle size, more especially in the range 8–8½ microns, is prepared by controlled heating of anhydrous calcium hydrogen phosphate having a similar crystal form and particle size. The latter phosphate is prepared by precipitation of brushite and dehydration in an aqueous medium such as aqueous phosphoric acid at an elevated temperature. When the new pyrophosphate is employed as a source of calcium and phosphate ions in the preparation of luminescent phosphors, the products have enhanced luminescent brightness as compared with those produced from conventional calcium hydrogen phosphate.

3,635,661

SOLVENT EXTRACTION PROCESS FOR SEPARATING IONIC COMPOUNDS

Leland J. Beckham, Pasco County, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 17, 1967, Ser. No. 683,878

Int. Cl. C01b *25/28*, *25/30*

U.S. Cl. 23—107 12 Claims

Metathesis reactions between water-soluble ionic compounds are carried out by means of a liquid extraction process using water and a water-miscible organic solvent. The separation of mixtures of water-soluble salts are also carried out using water and a water miscible organic solvent.

3,635,662

KAOLIN PRODUCT AND METHOD OF PRODUCING THE SAME

Sanford C. Lyons, Bennington, Vt., assignor to Georgia Kaolin Company

Continuation-in-part of application Ser. No. 565,346, July 6, 1966, now abandoned, Continuation-in-part of application Ser. No. 227,488, Oct. 1, 1962, now abandoned. This application Dec. 5, 1969, Ser. No. 882,806

Int. Cl. C09c *1/42*

U.S. Cl. 23—110 R 3 Claims

A new kaolinite product and method of producing it are provided in which the kaolinite consists predominantly by weight of the 2 to 10 microns (e.s.d.) fraction of washed kaolin originally and prior to delamination including a major percentage of coarse particles greater than two microns (e.s.d.) said washed kaolin having been extruded under pressure of at least 350 pounds per square inch through holes having a diameter of one-sixteenth to seven-sixteenths inches, said fraction having a whiter color than the source material of the same size, a greater diameter thickness ratio than the source material of the same size and substantially better makedown characteristics than those of the fines fraction from the same source.

3,635,663

REDUCTION OF THE ALKALI METAL CONTENT OF CRYSTALLINE ALUMINOSILICATES OF THE FAUJASITE TYPE

Leo Moscou, Castricum, Netherlands, assignor to Koninklijke Zwavelzuurfabrieken Voorheen Ketjen N.V., Amsterdam, Netherlands

Filed Nov. 26, 1969, Ser. No. 880,438
Claims priority, application Netherlands, Dec. 6, 1968, 6817493
Int. Cl. C01b *33/28*
U.S. Cl. 23—112 8 Claims

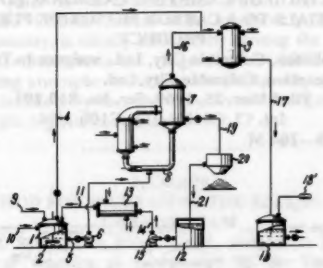
In the reduction of the alkali metal content of a crystalline aluminosilicate of the faujasite type by subjecting the latter to a plurality of base exchanges with an aqueous solution containing ions of rare earth metals, there is a treatment of the crystalline aluminosilicate intermediate the base exchanges by which the subsequent base exchange can achieve increased reduction of the alkali metal content. Such intermediate treatment involves adding, to the moist aluminosilicate derived from a prior base exchange, an organic liquid which together with water forms a mixture capable of being azeotropically distilled, heating the suspension thus obtained to boiling temperature, and separating the azeotropically over-distilling water, whereupon the aluminosilicate, which still may be moistened with at least some of the organic liquid, can be subjected to the base exchange following such intermediate treatment.

3,635,664

REGENERATION OF HYDROCHLORIC ACID PICKLING WASTE BY H_2SO_4 ADDITION, DISTILLATION AND $FeSO_4$ PRECIPITATION

Yasuo Morimoto, Osaka, Japan, assignor to Daido Chemical Engineering Corporation, Osaka-shi, Japan

Filed May 6, 1970, Ser. No. 35,199
Claims priority, application Japan, Aug. 20, 1969, 44/66243; Nov. 8, 1969, 44/89523
Int. Cl. B01d *3/34*; C01g *49/14*; C01b *7/08*
U.S. Cl. 23—126 4 Claims



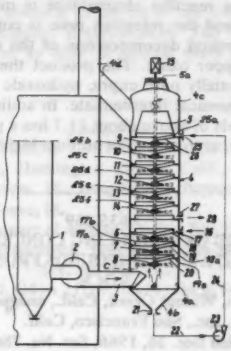
In recovering hydrochloric acid from a spent hydrochloric acid pickle liquor the process is characterized by adding sulfuric acid to hydrochloric acid waste to convert $FeCl_2$ in said waste to HCl and $FeSO_4$ and to obtain a mixture containing at least 38 percent by weight of free sulfuric acid, distilling said resultant mixture to vaporize substantially all of the HCl therefrom together with water and to precipitate ferrous sulfate, condensing said HCl and water thus vaporized to recover hydrochloric acid, separating the precipitated ferrous sulfate from the residual liquid and circulating the resultant liquid free of ferrous sulfate as a sulfuric acid source.

3,635,665

PROCESS FOR THE RECOVERY OF MAGNESIUM OXIDE AND SULFUR DIOXIDE

Konrad Mattern, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt (Main), Germany

Filed Aug. 21, 1969, Ser. No. 852,027
Claims priority, application Germany, Aug. 22, 1968, P 17 94 009.9
Int. Cl. C01f *5/42*, *5/02*; C01b *17/48*
U.S. Cl. 23—129 1 Claim



A method of recovering MgO and SO_2 from the flue gases of a combustion process and for producing a digestion liquor for use in a pulp plant wherein the gases containing MgO and SO_2 are passed upwardly through outwardly dispersed atomized sprays of liquid. The liquid droplets are collected outwardly of the atomizing disks and passed to successively lower atomizing units where the process is repeated. Water introduced above the lower (wet precipitator) set of atomizing disks strips the MgO fly ash from the gas to form a suspension which is used in the upper stages to react with SO_2 (absorption stage) and produce the digestion liquor.

3,635,666

PROCESS FOR THE PURIFICATION OF ALKALI METAL SULFIDES

George S. Fujioka, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 1, 1970, Ser. No. 51,679
Int. Cl. C01b *17/22*
U.S. Cl. 23—134 10 Claims

Disclosed is a process for the purification of alkali metal sulfides which involves contacting the sulfide as a melt with solid aluminum, aluminum oxide, silica or mixtures thereof.

3,635,667

DRYCLEANING WITH HYDROGEN PEROXIDE

Robert E. Keay, Hightstown; Harry M. Castrantas, Trenton, both of N.J., and Donald G. MacKellar, Yardley, Pa., assignors to FMC Corporation, New York, N.Y.

Filed July 23, 1970, Ser. No. 57,817
Int. Cl. D06l *1/00*
U.S. Cl. 8—142 3 Claims

Drycleaning of white garments is carried out by including, in conventional solvent-detergent baths, hydrogen peroxide, water, and sufficient volatile alkali (e.g. ammonia) to make the water phase slightly alkaline, using limiting ratios of the ingredients to insure adequate bleaching without damage to the fabric.

3,635,668
COPPER HYDRATE PRODUCTION

James Barker, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,413
Int. Cl. C01g *3/02*; A01n *11/04*
U.S. Cl. 23—147 25 Claims

Copper sulfate, sodium hydroxide and aqueous ammonia are mixed at a pH of 10 to 12.5, the reaction mixture containing 3 to 10 grams of ammonia per liter of reaction mixture. The reactants may be fed to the reaction zone as separate streams or, if desired, the copper sulfate solution and the aqueous ammonia may be initially mixed and fed together to the reaction zone for mixture with the sodium hydroxide. The reaction temperature is maintained at less than 112° F. and the retention time is controlled so as to avoid the undesired decomposition of the cupric hydroxide product to copper oxide. The product thus obtained comprises an essentially pure cupric hydroxide product suitable for use as a chemical intermediate. In addition, the product obtained at a pH of above about 11.7 has a particle size sufficiently small so as to make the product highly suitable for use as a fungicide.

3,635,669
METHOD OF PRODUCING CONCENTRATED PHOSPHORIC ACID COMPOUNDS FROM PHOSPHATE ROCK

Allen G. Rubin, Walnut Creek, Calif., assignor to B. D. Bohna & Company, Inc., San Francisco, Calif.

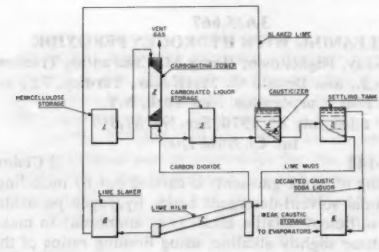
Filed Dec. 26, 1968, Ser. No. 786,877
Int. Cl. C01b *25/18*, *25/28*, *25/30*, *25/32*
U.S. Cl. 23—165 7 Claims

Phosphate rock is digested with molten ammonium bisulfate and between 5 and 16 percent by weight of water to form a solid reaction product. The water is added to the mixture of phosphate rock and ammonium bisulfate either before, during or after the digestion reaction between the phosphate rock and molten ammonium bisulfate. Concentrated phosphoric acid is extracted from the ground, solid reaction product with a nonaqueous, polar, oxygen-containing organic solvent having between one and ten carbon atoms. A phosphoric acid compound or in other words a phosphate is then separated from the solvent either in the form of concentrated phosphoric acid by evaporating the solvent, or in the form of a phosphate salt by adding a base to the extract and precipitating the phosphate salt.

3,635,670
RECOVERY OF DILUTE CAUSTIC SODA SOLUTIONS FROM SPENT LIQUORS CONTAINING HEMICELLULOSE

David K. Kennedy, Clay, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,234
Int. Cl. C01d *1/00*; D21c *11/00*
U.S. Cl. 23—185 7 Claims

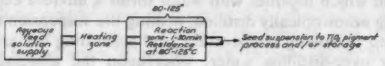


Caustic spent liquor, from the processing of pulp material such as wood and cotton pulp in the purification of cellulose, may contain up to 10 percent caustic soda along with significant amounts of both inorganic salts and organic matter made up of hemicellulose, pentosans, hexosans, galactans, and the like, which are extracted from the pulp by the action of the caustic solution.

3,635,671
CONTINUOUS PREPARATION OF TITANIUM DIOXIDE SEED SUSPENSIONS

Elmer C. Tveter, deceased, late of Walnut Creek, Calif. (by Cora Belvin Judd Tveter, executrix), and Joseph P. Surls, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 694,213, Dec. 28, 1967, now abandoned. This application May 7, 1970, Ser. No. 35,487
Int. Cl. C01g *23/04*
U.S. Cl. 23—202 R 15 Claims

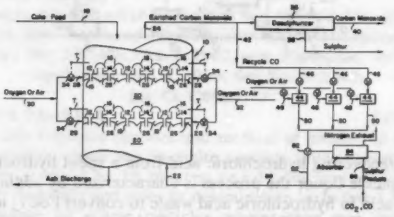

80-125°
Aqueous feed solution supply
Heating zone
Reaction zone - 1-60min residence at 80°-125°C
Seed suspension to TiO2 pigment process and/or storage

A continuous process is provided for preparing an opalescent seed suspension of colloidal TiO_2 particles, i.e. seed suspension. In this method a stream of an aqueous feed solution having certain chloride, titanium, hydrogen and multivalent ion concentrations is conducted through a heating zone where it is heated to a temperature of between 80° to 125° C. and then the stream is continuously conducted through a reaction zone while maintaining the temperature of the stream within said range. The total period of time (reaction time) during which the stream is maintained within said temperature range is from about 1 to about 30 minutes. The heating and reaction zones are designed and the flow rate of the stream is controlled to prevent back mixing of portions of the flowing stream which differ substantially as to the degree of reaction attained therein.

3,635,672
METHOD OF GASIFYING CARBONACEOUS MATERIALS TO A CARBON MONOXIDE FUEL GAS PRODUCT

Cecil J. Johnson, Columbia City, Ind., assignor to Total Energy Corporation, Columbia City, Ind.

Filed Mar. 25, 1969, Ser. No. 810,101
Int. Cl. C01b *31/18*; C10b *1/04*
U.S. Cl. 23—204 M 9 Claims



A method of gasifying coke, carbon, char or other carbonaceous materials by passing a mixture of carbon dioxide, carbon monoxide and oxygen or oxygen containing gases through a bed of the carbonaceous materials. The temperature of the gasification process is regulated and maintained by adding additional carbon monoxide and oxygen or oxygen containing gases at selected points in the process.

3,635,673

FLUORINATION OF BORIC ACID AND PHOSPHOROUS ACID

Robert A. Wiesboeck, Atlanta, Ga., assignor to United States Steel Corporation

Filed July 31, 1970, Ser. No. 60,147
Int. Cl. C01b 7/22, 9/08
U.S. Cl. 23—205 10 Claims

A method of producing boron trifluoride or phosphorus trifluoride using a metal fluorosulfonate fluoride, $MF(FSO_3)$, as the fluorinating agent is disclosed. Boric acid, H_3BO_3, and phosphorous acid, H_3PO_3, respectively, are employed as the boron or phosphorus source.

3,635,674

PROCESS FOR RECOVERING REFRACTORY CARBIDE PARTICLES FROM PIECES OF CEMENTED CARBIDES

Warren M. Shwayder, Hill House, Goodhue Road, Bloomfield Hills, Mich.

Filed Mar. 12, 1969, Ser. No. 806,706
Int. Cl. C01b 31/34, 31/30; C01g 51/12
U.S. Cl. 23—208 8 Claims

Recovering refractory carbide from cemented carbide pieces by immersing the pieces in an amine solution in a sealed vessel, introducing oxygen into the vessel under pressure, while autogenously milling the pieces, thereby dissolving the binder and leaving the carbide in particulate form and thereafter physically separating the particles from the solution.

3,635,675

PREPARATION OF GRAPHITE YARNS

Herbert M. Ezekiel, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 28, 1968, Ser. No. 732,555
Int. Cl. C01b 31/07
U.S. Cl. 23—209.1 13 Claims

A method of making graphite fibers with high-tensile strength, high modulus of elasticity and, in many instances, fibers of improved graphitic character is described. The method of producing such fibers, generally in the form of yarn, comprises rapidly bringing a stabilized synthetic polymer yarn to a temperature within the range of 1800°–3200° C. Stabilization of the synthetic polymer yarn, when necessary, is usually effected by heating the yearn at a selected temperature in the range of about 200°–500° C. in an oxidizing atmosphere. Among the preferred polymers are the acrylonitrile polymers and polymers of nitrogen-containing polycylic organic compounds.

3,635,676

METHOD FOR INCREASING THE STRENGTH OF CARBON FOAM

Arthur E. Sands, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 5, 1969, Ser. No. 874,380
Int. Cl. C01b 31/02
U.S. Cl. 23—209.4 1 Claim

Carbon foam of increased strength is produced by incorporating a fine particulate carbonizable material in the carbon foam ingredients including urethane foam producing components and a binder of partially polymerized furfuryl alcohol prior to the foam producing reaction. The carbonizable material provides cell forming nuclei for the urethane reactants to form a fine-celled structure. This material, on carbonization, shrinks essentially the same amount as the other foam components including the binder to obviate deleterious differences in shrinkage rates. Suitable carbonizable materials include synthetic resins, pitch, wood flour, wheat flour, sugar, and cornstarch.

3,635,677

GLYCOL DETECTION IN OIL

Harry N. Drake, Jr., Yardville, N.J.; Leo A. Fabbro, Morrisville, Pa., and Ronald E. Fanucci, Yardville, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Apr. 30, 1970, Ser. No. 33,537
Int. Cl. G01n 33/26, 21/06
U.S. Cl. 23—230 R 9 Claims

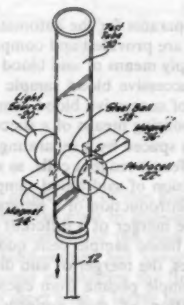
A sample of engine oil is taken from a crankcase and introduced into an aqueous oxidizing solution. The mixture is shaken and allowed to separate into the oil and aqueous phases. A sample of the aqueous phase is then introduced onto a chromogenic aldehyde reagent adsorbed on a suitable supporting media. The sample and reagent are contacted and the presence or absence of glycol in the engine oil is observed by chromogenic determination. The method allows the observation of as little as several parts per million of glycol in oil.

3,635,678

CLOT-TIMING SYSTEM AND METHOD

Lamont J. Seitz, Huntington Beach, Calif., and John G. Bowen, Mundelein, Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation-in-part of application Ser. No. 738,382, June 17, 1968, now abandoned. This application June 13, 1969, Ser. No. 846,992
Int. Cl. G01n 11/16, 33/16; H01h 9/00
U.S. Cl. 23—230 R 40 Claims



A system and method is provided which has the general capabilities of measuring the speed of coagulation, congealing or solidification of a fluid sample, and which has particular utility in the measurement of the time required by a sample under test to increase viscosity to a particular level. The system and method to be described is predicated on a viscosity principle, and it includes a member suspended in the fluid sample and which changes position when the sample achieved a predetermined degree of viscosity. The change in position of the aforesaid member is sensed, and the time at which the change occurs, is used in the determination of the time required, for example, for the sample to form a fibrin clot, in a blood or plasma sample or to effect a particular reaction causing solidification or congealing of the sample.

3,635,679

METAL ION DETECTING MEMBRANE

Rene Bloch, Savion, Israel; Robert Bauer, Bristol, and Ben F. Phillips, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 20, 1969, Ser. No. 878,544
Int. Cl. G01n 33/00
U.S. Cl. 23—230 R 9 Claims

Metal ions can be determined colorimetrically by using a semipermeable polymeric membrane containing a chelating

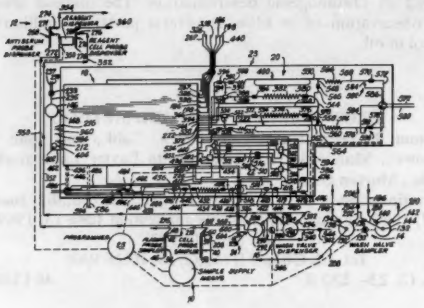
agent and a solvent therefor, which chelating agent changes color upon contact with the metal ions being determined.

3,635,680

AUTOMATIC METHOD AND APPARATUS FOR THE SEQUENTIAL TYPING OF BLOOD SAMPLES

John C. A. Peoples, Nanuet, and Stanford L. Adler, Monsey, both of N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.

Filed Sept. 22, 1969, Ser. No. 864,263
Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 23—230 B **8 Claims**



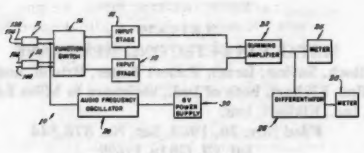
Method and apparatus for the automatic, sequential typing of blood samples are provided and comprise the supply from blood sample supply means of said blood samples in the form of a stream of successive blood sample plasmas and a concomitant stream of successive blood sample cells, the supply from reagent dispensing means of a successive stream of different antisera, as spaced by a separating fluid, and a successive stream of different reagent cells, as spaced by a separating fluid, the division of said blood sample cells stream into quotients by the introduction of a separating fluid at spaced points therein, the merger of a different one of said antisera with each of the blood sample cells quotients from each of said blood samples, the merger of said different reagent cells with the blood sample plasma from each of said blood samples, the incubation of said antisera-blood sample cells stream and of said reagent cells-blood sample plasma stream to promote reaction therebetween, and the provision of readily readable and reproducible results of the blood-typing procedure.

3,635,681

DIFFERENTIAL CONDUCTIVITY-MEASURING APPARATUS

Robert Wayne Rogers, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 13, 1969, Ser. No. 876,350
Int. Cl. B01k *3/00*; C12k *1/10*; G01n *31/14*
U.S. Cl. 23—253 R **8 Claims**



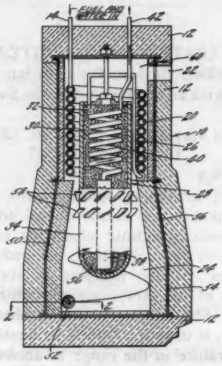
Apparatus for measuring the change and rate of change in electrical conductivity in a test system due to a chemical reaction between a substance to be detected and a test reagent, as, for example, in an enzyme-substrate reaction, said apparatus including a pair of probes each of which has a pair of electrodes, the electrodes of one of said probes having the test reagent associated therewith by matrix means, preferably in fixed form, such that when said probes are placed in contact with an ionic medium containing the substance to be detected, the conductivity between the electrodes is dependent upon the conductivity of the matrix means and/or said ionic medium, and conductivity-measuring circuit means connected to both probes which electronically subtracts the background conductivity caused by the ionic medium and provides a differential measurement of the change and rate of change in conductivity caused by the reaction of the substance to be detected with the test reagent and thereby provides a measurement of the concentration of the substance to be detected in the ionic medium.

3,635,682

FUEL CELL REACTOR-BURNER ASSEMBLY

Raymond W. Vine, Bolton; Paul R. Watson, Marlborough, and Warren L. Luoma, East Hartford, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 13, 1969, Ser. No. 833,109
Int. Cl. B01j *9/04, 7/00*
U.S. Cl. 23—288 R **6 Claims**



An improved temperature distribution reactor-burner assembly, consisting essentially of a burner insert having a straight section and an inwardly tapering section serving to choke the flow of hot combustion gases in the vortex burner at the location where increased heat transfer to the reactor can be desired. Heat-transfer fins are disposed on the external wall of the reactor can to increase the area exposed to the swirling exhaust gases. The fins function to absorb and block radiation from the swirling combustion flames and the hot burner walls.

3,635,683

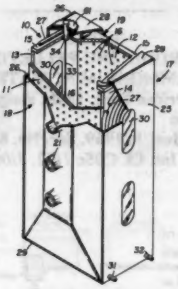
METHOD OF CRYSTAL GROWTH BY VAPOR DEPOSITION

James Reneau Harrison, Plano, and James Wayne Gilpin, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 5, 1968, Ser. No. 734,759
Int. Cl. B01j *17/26*
U.S. Cl. 23—294 **6 Claims**

A method for growing elongated rods of silicon or the like by positioning an elongated silicon filament within a reaction chamber, directing the gas from which material is to be

deposited over the filament in a direction transverse to the longitudinal axis of the filament at a relatively uniform flow rate along the length of the filament, and while the gas is



being directed transversely to the filament, rotating the filament so that all the parts along the surface will be uniformly exposed to the gas.

3,635,684

COMPOSITE FUEL ARTICLE

Donald E. Seymour, P.O. Box 3161, Madison, Wis.

Filed Aug. 11, 1969, Ser. No. 849,196

Int. Cl. C10l 5/00

U.S. Cl. 44—10 R **2 Claims**

A composite fuel article comprised of particulate consumable material, such as ground corn cobs and husk material; a petroleum derivative, such as paraffin slack wax; a lignosulfonate; and a corn starch. The lignosulfonate is heated and mixed with the corn starch, the wax is heated to melting and then all the constituents are mixed together, compressed under very moderate pressure in a mold, and cooled to form the solid fuel article in the shape of a log or briquette.

3,635,685

POUR POINT DEPRESSANT

Richard J. Sonnenfeld, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 24, 1969, Ser. No. 844,618

Int. Cl. C10l 1/22

U.S. Cl. 44—62 **13 Claims**

Depression of the pour point of a normally liquid hydrocarbonaceous material is obtained by adding to the liquid a hydrogenated butadiene/styrene copolymer which contains a terminal group selected from the group consisting of hydroxy, carboxy and pyridyl, said copolymer having prior to hydrogenation a vinyl unsaturation corresponding to the proportion of styrene in the copolymer, and having a percent unsaturation subsequent to hydrogenation in the range of 1 to 15 percent.

3,635,686

MINERAL OIL COMPOSITIONS CONTAINING METAL ALKYL ESTER TETRAPROPENYLSUCCINATES

Paul Y. C. Gee, Woodbury, and Harry J. Andress, Jr., Pitman, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 427,181, Jan. 21, 1965, now abandoned. This application May 19, 1969, Ser. No. 826,012

Int. Cl. C01l 1/14

U.S. Cl. 44—68 **7 Claims**

Mineral oil compositions are provided containing a small amount sufficient to inhibit corrosive deterioration of metal surfaces of a member of the group consisting of metal alkyl ester tetrapropenylsuccinates and alkoxy metal alkyl ester tetrapropenylsuccinates, the metal component of said tetrapropenylsuccinates being selected from the class consisting of Groups I, II and III of the Periodic Table of the Elements.

3,635,687

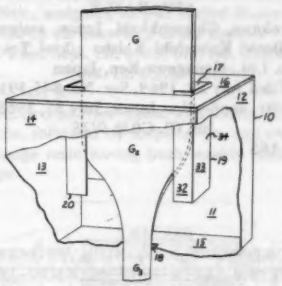
DOWNDRAWING METHOD FOR PRODUCING VERY THIN GLASS SHEETS

Glenn H. Dunlap, Maumee; Anthony M. Kobylak, Rossford, and John E. Miller, Toledo, all of Ohio, assignors to Owens-Illinois, Inc.

Filed May 26, 1970, Ser. No. 40,616

Int. Cl. C03b 17/00

U.S. Cl. 65—106 **4 Claims**



A method for the production of thin glass from preformed glass blanks by heating the glass to attenuation temperature, maintaining the edge portions of the glass at a temperature above attenuation temperature but lower than the center portion of the glass and attenuating the deformable glass to produce a very thin sheet with a larger useable, planar area and closely controlled, dimensional tolerances. The heating furnace is improved by a pair of channel members disposed within the furnace and forming a path of travel from the glass and reducing the temperature of the glass edge portions. This process provides a method of increasing the total useable area of the preformed blank and permitting close control of the dimensional thickness of the attenuated glass sheet. The prior art methods produced glass sheets having areas of thin dimensions where the area and the thickness dimension is a constant ratio of the width to the thickness of the sheet. This process produces sheets having a width to thickness ratio three times that of the prior art sheet.

3,635,688

GLASS BULB BLOW-MOLDING APPARATUS

Takaaki Kurokawa, Kanagawa-ken, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha also known as Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan

Filed Aug. 13, 1969, Ser. No. 849,729

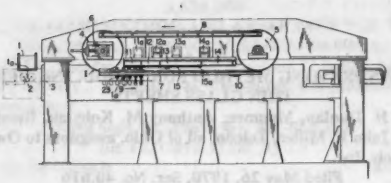
Claims priority, application Japan, Aug. 19, 1968, 43/58537

Int. Cl. C03b 9/12

U.S. Cl. 65—183 **1 Claim**

A vacuum tank is provided in a glass bulb blow-molding machine of the ribbon-type to rapidly impart a negative pressure to the interior of each parison which is initially formed by blowing without a mold, thereby contracting the neck por-

tion of the parison so that same may be clasped by a pair of mold halves without clipping the surface of the parison by



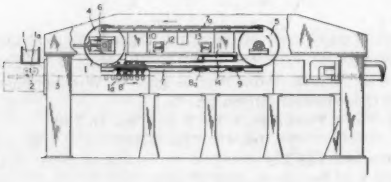
the edges of the mold halves thereby preventing deformations and/or formation of casting fins in the final product.

3,635,689

COOLING DEVICE IN A GLASS BULB BLOWING APPARATUS

Takaaki Kurokawa, Chigasaki-shi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha a/k/a/ Tokyo Shibaura Electric Co. Ltd., Kanagawa-Ken, Japan

Filed July 28, 1969, Ser. No. 845,391
Claims priority, application Japan, July 31, 1968, 43/54082
Int. Cl. C03b *9/28*
U.S. Cl. 65—185 **6 Claims**



A cooling device in a glass bulb blowing apparatus usually called "Ribbon Machine" for manufacturing electric lamp bulbs or glass bulbs, in which apparatus molten glass discharged from an orifice of a glass-melting furnace is pressed into ribbon shape by means of a pair of feed rollers and is positively fed thereby to a plate link device, a blow-head link device and a mold-operating link device operating synchronously with said feed rollers said devices blowing said ribbon-shaped glass into electric lamp bulbs or glass bulbs, said cooling device comprising a blow-head link device surrounding a pair of sprockets, cams provided on a guiding rail for shifting upward and downward the blow head of said blow-head link device, and forming air and cooling air reservoirs for supplying air forming and cooling respectively into said blow head successively and compulsorily, whereby said glass bulb blowing apparatus is simplified without employing independently provided cooling devices.

3,635,690

SOIL TREATING METHOD AND COMPOSITION FOR CONSERVING NITROGEN IN SOIL BY ADDITION OF A PYRAZOLE THERETO

Jeffrey D. Griffith, Lafayette, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 16, 1968, Ser. No. 739,582
Int. Cl. C05 *11/00*
U.S. Cl. 71—1 **1 Claim**

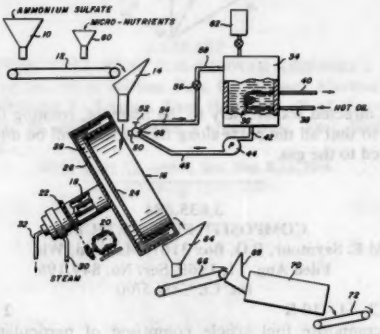
The present invention relates to crop culture and is particularly concerned with practices for conserving soil nitrogen and for supplying the soil nitrogen requirements for plant nutrition. These practices involve the employment, as an active agent, of a pyrazole compound which may be pyrazole itself or a compound wherein the pyrazole is substituted by a total of not more than two halo, nitro or lower aliphatic radicals, together with the mineral acid addition salts of these compounds.

3,635,691

METHOD FOR PRODUCING PELLETIZED AMMONIUM SULFATE-AMMONIUM NITRATE MATERIAL

Alma L. Earl, American Fork, Utah, assignor to United States Steel Corporation

Filed Jan. 1, 1969, Ser. No. 820,839
Int. Cl. C05c *1/02, 3/00*
U.S. Cl. 71—59 **4 Claims**



A method for improving an ammonium-sulfate fertilizer material comprising feeding ammonium sulfate and liquid ammonium nitrate to a pelletizing pan, rotating said pan until pellets of a predetermined size are formed and separating from said pan the so-formed pellets of improved fertilizer material comprising ammonium sulfate and ammonium nitrate. So-called trace elements or micronutrients may be incorporated in the pellets.

3,635,692

HALOGENATED ARYLOXYACETYL CYANAMIDES AS HERBICIDES

Herman Breuer, Regensburg, Germany, assignor to Olin Chemical Co., Inc.

Original application Oct. 9, 1967, Ser. No. 674,008, now Patent No. 3,524,607, Continuation-in-part of application Ser. No. 566,480, July 20, 1966, now abandoned. Divided and this application Aug. 29, 1969, Ser. No. 872,796
Int. Cl. A01n *9/20*
U.S. Cl. 71—97 **15 Claims**

A series of halogenated aryloxyacetyl cyanamides has been provided. These compounds are characterized by unique biological properties, and it has been found that members of the series provided herein are outstanding herbicides.

3,635,693

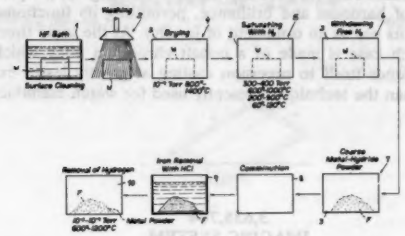
METHOD OF PRODUCING TANTALUM OR NIOBIUM POWDER FROM COMPACT BODIES

Hans Joachim Friedrich, and Horst Meyer, both of Goslar, Germany, assignors to Hermann C. Starck, Berlin, Germany

Filed Jan. 27, 1969, Ser. No. 793,993
Int. Cl. B22f *9/00*
U.S. Cl. 75—0.5 BB **5 Claims**

A block of tantalum or niobium is first stripped of superficial impurities by immersion in an acid bath, for instance hydrofluoric acid. Thence it is dried in a vacuum and satu-

rated with hydrogen under high pressure and heat. This embrittles the body which is fragmented into coarse metal-hydride particles. The brittle fragments are crushed to a



powder of the desired fineness and the powder is cleaned in boiling acid then degassed in a vacuum under heat to transform the interstitial hydride to the pure-metal powder.

3,635,694

METHOD OF MANUFACTURING MANGANESE OXIDE PELLETS

Vincent H. K. Chu, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Original application May 29, 1967, Ser. No. 642,182, now abandoned. Divided and this application July 7, 1969, Ser. No. 839,679

Int. Cl. C01g *45/02*

U.S. Cl. 75—3 **8 Claims**

Manganese oxide pellets are produced by forming a finely divided mixture of manganese ore, a carbonaceous fuel such as coke, and an addition agent which will form gaseous products on heating, and heating the balls at a temperature and for a time sufficient to partially reduce the manganese ore and obtain the required porosity. The pellets may be subjected to an additional step of heating the partially reduced pellets in the presence of a reducing gas at a temperature and for a time sufficient to reduce a major portion of the manganese content to manganous oxide.

3,635,695

DESULFURIZING WITH MANGANESE OXIDE PELLETS

Vincent H. K. Chu, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Original application May 24, 1967, Ser. No. 642,182, now abandoned. Divided and this application Aug. 26, 1969, Ser. No. 853,196

Int. Cl. B01j *11/32*; C01g *45/02*; C21b *1/04*

U.S. Cl. 75—6 **2 Claims**

Pellets of manganese ore and having a porosity of not less than 45 percent are disclosed. In a preferred form the major portion of the manganese content is present as manganous oxide. The balls are produced by forming a finely divided mixture of manganese ore, a carbonaceous fuel such as coke, and an addition agent which will form gaseous products on heating, and heating the balls at a temperature and for a time sufficient to partially reduce the manganese ore and obtain the required porosity. The preferred form of pellets is produced by the additional step of heating the partially reduced pellets in the presence of a reducing gas at a temperature and for a time sufficient to reduce a major portion of the manganese content to manganous oxide. The so reduced pellets are useful as sulfur acceptors for removing sulfur from solid sulfur-containing materials such as coke pellets and metallized-iron-ore pellets.

3,635,696

TREATMENT OF MOLTEN METAL USING ARC HEAT AND VACUUM

Charles W. Finkl, Chicago, Ill., assignor to A. Finkl & Sons Company, Chicago, Ill.

Filed May 21, 1968, Ser. No. 739,586

Int. Cl. C21c *5/52*; C22d *7/00*; C21c *7/10*

U.S. Cl. 75—11 **15 Claims**

Hydrogen and oxygen are removed from molten steel by simultaneously subjecting molten steel to agitation, an alternating current heating arc, and two successive levels of vacuum, one level of vacuum being relatively low and above the glow range and of relatively long duration to substantially decrease the oxygen content of the molten steel; the other level of vacuum being relatively high and below the glow range and of relatively short duration to substantially decrease the hydrogen content of the molten steel.

3,635,697

RECOVERY OF GOLD

Bernard J. Scheiner, Sparks, and Roald E. Lindstrom, Reno, both of Nev., assignors to The United States of America as represented by the Secretary of the Interior

Filed Sept. 30, 1969, Ser. No. 862,445

Int. Cl. C22b *11/04*

U.S. Cl. 75—101 R **5 Claims**

Gold is recovered from dilute solution by complexing with malononitrile, followed by sorption on, and elution from, an anion-exchange resin having both weakly basic and strongly basic groups.

3,635,698

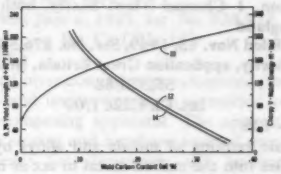
HIGH-STRENGTH, HIGH-TOUGHNESS (IRON-CARBON-NICKEL-MOLYBDENUM) STEEL WELD METAL

Julius Heuschkel, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1970, Ser. No. 26,230

Int. Cl. C22c *37/00*

U.S. Cl. 75—123 J **5 Claims**



An alloy is described which is suitable for use as a weld-filler material and which is characterized by having controlled strength and toughness. The composition includes about 4.5 percent nickel, 2 percent molybdenum, up to 0.35 percent carbon, low impurity and interstitial content, and the balance iron. The strength is controlled in accordance with the relationship:

0.2 percent yield strength = 52 K.s.i. + 268.4 K.s.i. C

where C is the carbon content of a weldment made from the alloy in weight percent.

3,635,699

METHOD OF PRODUCING SIZED PARTICLES OF LOW-CARBON FERROCHROMIUM

Cecil G. Chadwick, Lewiston, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,340

Int. Cl. C22c *33/00*, *35/00*; B22f *9/00*

U.S. Cl. 75—130.5 **4 Claims**

Method for producing sized particles of high-purity low-carbon ferrochromium by heating under vacuum an ag-

glomerated mixture of finely divided high-carbon ferrochromium, oxidized ferrochromium containing sufficient oxygen to react with the carbon in the high-carbon ferrochromium, and a slag-forming material such as silica whereby a reaction product is obtained comprising low-carbon ferrochromium in a matrix of slag. The agglomerated reaction product thus produced is crushed and the crushed material given a leaching treatment to remove the slag constituent.

3,635,700

VANADIUM-BASE ALLOY

Peter Wincierz, Oberurse, Taunus; Manfred Ruhle, Frankfurt am Main; Bernhard H. Reddemann, Werdohl-Barenstein; Manfred Schirra, Leopoldshafen, and Horst Otto Bohm, Karlsruhe, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 26, 1969, Ser. No. 828,112
Claims priority, application Germany, May 24, 1968, P 17 58 397.0
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 V 6 Claims

An alloy contains 0.1–2.8 percent of at least one of the elements titanium, zirconium, and hafnium, traces to 2 percent silicon, traces of 4 percent germanium, balance vanadium, traces of usual metallic impurities which are due to the manufacturing process and, based on the vanadium content, 400–4,000 p.p.m. oxygen, 100–1,500 p.p.m. nitrogen, and 100–1,500 p.p.m. carbon, the total of oxygen, nitrogen, and carbon being not in excess of 5,000 p.p.m.

3,635,701

PROCESSES FOR REFINING THE GRAIN SIZE OF METALS

Peter W. Davies, 127 Summerland Lane, Caswell, and John P. Dennison, 1 Channel View, Sketty, both of Swansea, Wales, England

Filed Nov. 13, 1969, Ser. No. 876,587
Claims priority, application Great Britain, Nov. 21, 1968, 55,328/68
Int. Cl. C22c *1/00*
U.S. Cl. 75—135 8 Claims

In the grain refining of metals and alloys by introducing oxide particles into the molten metal to act as nuclei while it solidifies, the nuclei are introduced as internally oxidized particles of a metal carrier. Examples of such metal carriers are copper alloys containing 90 percent or more copper, the oxides in them being of nickel, cobalt or iron.

3,635,702

COPPER-NICKEL ALLOYS OF HIGH-YIELD STRENGTH

Frank A. Badia, Ringwood, N.J., and Frank J. Ansuini, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 1, 1968, Ser. No. 741,780
Int. Cl. C22c *9/06*
U.S. Cl. 75—159 15 Claims

Corrosion-resistant, cast (and wrought) copper-nickel alloys containing special amounts of nickel, chromium and silicon are characterized by high-yield strengths—e.g., from about 40,000 and upwards of 50,000 p.s.i. This compares with substantially less than 40,000 p.s.i. for conventional copper-nickel alloys in commercial use. Heat treatment not required to develop strength; thus, associated problems are obviated.

3,635,703

ORNAMENTAL WATCH CASE

Gregory J. Pissarevsky, 5535 Netherland Ave., Riverdale, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,398
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 3 Claims

An ornamental watch case is disclosed having unique properties of hardness and brilliance, permitting its functional use and its use as an ornament of jewelry. At the same time, the watch case is made of a cobalt chromium alloy which readily lends itself to precision casting at greatly lesser expense than the technique presently used for watch manufacture.

3,635,704

IMAGING SYSTEM

Frank M. Palermiti, 5 Framingham Lane, Pittsford, N.Y.; Stephen F. Royka, 265 Howell Road, Fairport, N.Y.; William A. Sullivan, Jr., 638 Harriswood Drive, Webster, N.Y., and Robert L. Emerald, 182 C Brambury Drive, Rochester, N.Y.

Continuation-in-part of application Ser. No. 511,242, Dec. 2, 1965, now abandoned. This application Feb. 1, 1968, Ser. No. 702,194
Int. Cl. G03g *9/00, 13/00*
U.S. Cl. 96—1 13 Claims

Toner image degradation due to excessive buildup of thick deposits of a solid stable hydrophobic metal salt of a fatty acid on the surface of electrostatographic imaging members during successive imaging operations with development material containing the metal salt is prevented by continuously or intermittently maintaining the thickness of the buildup below about 10 microns by vigorous rubbing contact with a wiping member.

3,635,705

MULTILAYERED HALOGEN-DOPED SELENIUM PHOTOCONDUCTIVE ELEMENT

Anthony J. Ciuffini, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 3, 1969, Ser. No. 830,031
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 5 Claims

A xerographic plate having a two-layer photoconductive segment comprising a highly doped vitreous selenium transport layer of from about 20 to 200 microns in thickness and an overlaying control layer of at least about 5 microns thickness which comprises selenium. The plate is characterized by low residual potential as well as exhibiting a minimum ghosting effect.

3,635,706

SENSITIZED ELECTROPHOTOGRAPHIC LAYERS

Helmut Kampfer; Hans Ohlschlager, both of Cologne, Stammheim, and Wolf Gesierich, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

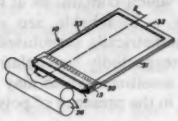
Filed May 18, 1966, Ser. No. 551,033
Claims priority, application Germany, May 29, 1965, A 49348
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.7 6 Claims

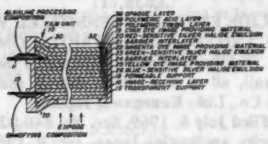
This invention relates to the optical sensitization with styryl dyes of electrophotographic materials, preferably containing zinc oxide as the photoconductor.

3,635,707
DIFFUSION TRANSFER PRODUCTS ADAPTED FOR MULTIPLE APPLICATION OF PROCESSING COMPOSITION AND/OR OPACIFIER AND PROCESSES FOR THEIR USE

Harold E. Cole, 8 Cottonwood Lane, Pittsford, N.Y.

Filed July 24, 1970, Ser. No. 58,017
Int. Cl. G03c *1/48, 5/54, 7/00*
U.S. Cl. 96—3 **65 Claims**





An integral negative-receiver film unit is disclosed which is adapted for one-step processing. The film unit comprises a transparent support coated with an image-receiving layer and having thereon a photosensitive element comprising at least one, and preferably three, silver halide emulsion layers having associated therewith nondiffusible dye image-providing materials capable of reacting with oxidized developing agent to produce diffusible dyes, and a top sheet which can be transparent or opaque. Two rupturable containers or one container with two compartments containing either a processing composition or an opacifier or both are positioned (a) adjacent the top layer of the photosensitive element and sheet and (b) adjacent the image-receiving layer or a contiguous reflective layer and the bottom layer of the photosensitive element. The film unit is placed in a camera, exposed and then passed between a pair of pressure-applying members in the camera as it is being removed therefrom. The pressure-applying members rupture the containers and spread processing composition and/or opacifier over and underneath the photosensitive element to render it light insensitive. The processing composition develops the exposed silver halide layers and diffusible dye images are formed as a result of development which diffuse to the image-receiving layer to provide a positive, right-reading image which is viewed through the transparent support on an opaque reflecting layer background which is present initially in the film unit or formed by opacifier in a rupturable container. Several embodiments of the film unit may be interchangeably employed cameras either with or without an image-reversing optical system.

3,635,708
VESICULAR IMAGING PROCESS

Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 553,040, May 26, 1966, now abandoned. This application Mar. 28, 1969, Ser. No. 811,672
Int. Cl. G03c *5/04, 5/24*
U.S. Cl. 96—27 **21 Claims**

A vesicular imaging method is employed wherein a poly(alkyl acrylate) or a poly(alkyl carbamate) produces a gas upon exposure to actinic light enabling the production of a visible image in the exposed areas of a vesicle-retaining film upon development.

3,635,709
LIGHT-SENSITIVE LITHOGRAPHIC PLATE

Kesanao Kobayashi, Kanagawa, Japan, assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation of application Ser. No. 601,847, Dec. 15, 1966, now abandoned. This application June 5, 1969, Ser. No. 833,878
Int. Cl. G03f *7/02;* **G03c** *1/52;* **C07c** *113/00*
U.S. Cl. 96—33 **18 Claims**

Light-sensitive compositions and positive-acting lithographic printing plates made therewith comprising an ester of 2-diazo-1-naphthol-4(or -5)-sulfonic acid with a polyhydroxy-phenyl that is a condensation product of acetone and pyrogallol.

3,635,710
METAL HEXACYANOFERRATE COATED SILVER HALIDE ELEMENTS AND PROCESS FOR MAKING LITHOGRAPHIC IMAGES

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 4, 1969, Ser. No. 847,399
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 **8 Claims**

An element suitable for preparing a long lived gelatin lithographic printing plate is prepared by coating a gelatino-silver halide emulsion layer with a hexacyanoferrate. In process of use, the element is exposed to actinic radiation, developed in a conventional developer, and activated with a cupric ion solution to form a lithographic image which accepts ink in the exposed areas and water in the unexposed areas. Novel activating solutions for the silver halide are provided. The resulting printing plates are capable of yielding many thousands of impressions.

3,635,711
METHOD AND AUTOMATED APPARATUS FOR PHOTOCOMPOSING

Wesley W. Miller, Wyncote; Gerold Litschi, Lansdale, and Warren A. Bixler, Warminister, all of Pa., assignors to W. R. Grace & Co., New York, N.Y.

Filed June 6, 1969, Ser. No. 830,972
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **5 Claims**

The disclosed invention is for an automated photocomposing apparatus and improvements in a method of operating such a photocomposing apparatus. The apparatus includes (A) means for storing and supplying severed sheets of plastic film; (B) means for dispensing and leveling a liquid photocurable composition on a sheet of plastic film; (C) a housing having at one end an actinic light source and at the other end a support adapted to receive thereon a supported liquid photocurable composition which on exposure to actinic light through an image bearing transparency becomes selectively insolubilized in the exposed portions thereof; (D) a vertically disposed posterior photocuring station; (E) an etching bath energized by ultrasonic energy; (F) a washing bath; (G) an air-drying station disposed adjacent the washing bath; and (H) a horizontally disposed posterior photocuring station for finally curing the processed plate. A plurality of conveying means transfer sheets from location (A) to location (H) in automated sequence. The invention is especially useful in preparing a developable printing plate from a liquid photocurable composition.

3,635,712
UPDATING RECORD MEMBER

Peter L. Pfluke, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 28, 1969, Ser. No. 803,152
Int. Cl. G03c *5/24, 5/04*
U.S. Cl. 96—48 **10 Claims**

A data storage record such as an Itek RS microfiche is updated by delineating an area to be processed, dark-adapting

at least this area and exposing to input data, and processing in the delineated area. In one embodiment, desensitization or dark adaptation is accomplished by treatment with hydrogen peroxide, followed by resensitization by the application of a reactive material such as a silver salt.

ERRATUM

For Class 96—67 see:
Patent No. 3,635,782

3,635,713

MANUFACTURE OF PHOTOGRAPHIC PAPER

August Jean Van Paesschen, Antwerpen, and Jan Jozef Priem, Mortsel, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Continuation-in-part of application Ser. No. 637,903, May 12, 1967, now abandoned. This application July 6, 1970, Ser. No. 52,675

Int. Cl. G03c *1/86*

U.S. Cl. 96—85 **7 Claims**

As a binder for pigment, e.g. baryta layers in photographic materials, about 0–75 percent of a conventional protein binder, e.g. gelatin, casein or zein, and about 100–25 percent of a latex of a graft copolymer of 80–99.5 percent of a C_{2-8} alkyl acrylate and 0.5–20 percent acrylonitrile, which latex is obtained by emulsion polymerization of such monomers in the presence of 5–15 percent of PVP and 0.5–2 percent of an anionic surface active emulsifying agent. The binder is used in an amount equal to about 5–25 percent of the pigment. All percentages are by weight and those of the PVP and surface-active agent are with respect to the total weight of monomers present.

3,635,714

PHOTOGRAPHIC FILMS CONTAINING ANTI-STATIC SCRATCH-PREVENTING BACKING LAYERS

Koji Oshibuchi, and Masayoshi Mayama, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed July 7, 1970, Ser. No. 53,014

Int. Cl. G03c *1/82*

U.S. Cl. 96—87 A **2 Claims**

A photographic film having successively on the backside of the support a polyvinyl acetal resin layer containing a matting agent and a polyvinyl acetal resin layer containing a phosphoric acid ester of a higher alcohol or amine salt thereof.

3,635,715

GELATINE-CONTAINING PHOTOGRAPHIC LAYERS WHICH HAVE IMPROVED PHYSICAL PROPERTIES

Herbert Grabhofer; Wolfgang Himmelmann, both of Koeln, and Dieterich Glabisch, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 28, 1969, Ser. No. 871,950

Claims priority, application Germany, Nov. 7, 1968, P 18 07 450.5

Int. Cl. C08f *15/40*

U.S. Cl. 96—87 R **8 Claims**

A photographic gelatine layer, which contains as plasticizer copolymers of (1) ethylene, (2) a half ester of an α,β-unsaturated dicarboxylic acid, the alcohol component of which is preferably aliphatic or cycloaliphatic and which contains up to eight C-atoms, preferably maleic acid half esters, (3) vinyl chloride, and (4) a vinyl ester of saturated carboxylic, preferably an aliphatic carboxylic acid which has up to five C-atoms.

3,635,716

PHOTOGRAPHIC MATERIAL FOR THE SILVER DYE BLEACHING PROCESS

Heinrich Bruengger, Basel, and Carlo Boragine, Fribourg, both of Switzerland, assignors to CIBA Geigy AG, Basel, Switzerland

Filed Aug. 21, 1969, Ser. No. 852,075

Claims priority, application Switzerland, Aug. 26, 1968, 12771

Int. Cl. G03c *1/10*

U.S. Cl. 96—99 **10 Claims**

Photographic material for the silver dyestuff bleaching process is provided which contains in at least one silver halide emulsion layer a bleachable azo dyestuff as image dyestuff and an asymmetrically substituted thiocarbocyanine as red sensitizer. Unexpectedly high relative sensitivities are achieved with these sensitizers which may have a betainelike structure, especially in the presence of polyazo dyestuffs.

3,635,717

SILVER HALIDE EMULSION SENSITIZED WITH NOBLE METAL AND SUGAR MERCAPTO COMPOUND

Reiichi Ohi; Tokiharu Kondo; Mitsunori Sugiyama, and Shiguro Syoji, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 8, 1969, Ser. No. 840,021

Claims priority, application Japan, July 8, 1968, 43/47701

Int. Cl. G03c *1/28*

U.S. Cl. 96—108 **15 Claims**

The present invention is directed to an improved sensitizer for silver halide light-sensitive emulsions which comprises a mixture of a noble metal sensitizer and a sugar derivative such as sugar alkyl mercaptals, sugar aryl mercaptals, alkyl thioglycosides and aryl thioglycosides. Particularly preferred are the combination of gold sensitizers and sugar derivatives. Specific examples of such derivatives are glucose dimethylmercaptal, xylose diethylmercaptal and lactose dimethylmercaptal.

3,635,718

PROCESS FOR HARDENING WATER-SOLUBLE POLYMERS

Alfred Froehlich, Marly-le-Grand, and Carlo Rossi, Bottmingen, both of Switzerland, assignors to CIBA Geigy AG, Basle, Switzerland

Continuation-in-part of application Ser. No. 709,881, Mar. 4, 1968, now abandoned. This application Jan. 22, 1970, Ser. No. 5,158

Claims priority, application Switzerland, Mar. 6, 1967, 3237/67

Int. Cl. G03c *1/30*

U.S. Cl. 96—111 **3 Claims**

The present invention relates to a process for hardening water-soluble polymers, especially gelatine in the form of photographic emulsions with bis-acryloylimide. This hardener combines low molecular weight with a very great hardening capacity.

3,635,719

HEAT DEVELOPABLE LIGHT-SENSITIVE ELEMENTS

Kinji Ohkubo; Junpei Noguchi, and Takao Masuda, all of Ashigara-Kumigun, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 8, 1966, Ser. No. 570,768

Claims priority, application Japan, Dec. 13, 1965, 40/76578

Int. Cl. G03c *1/02, 1/76, 3/00*

U.S. Cl. 96—114.1 **12 Claims**

A heat developable supported light-sensitive element wherein at least one layer thereon contains the silver salt of benzotriazole, a silver halide, or an inorganic halide capable of forming a silver halide by reaction with the silver salt of benzotriazole, a compound which decomposes upon heating to yield a basic material, and a reducing agent. In another embodiment, the layer further contains a compound capable of releasing water by heating.

Further described is a process for obtaining a print wherein the heat developable light-sensitive element(s) described above are heated for 1–30 seconds at 120°–170° C.

3,635,720

LIGHT-SENSITIVE FILM ELEMENT COMPRISING A POLYESTER OF A POLYHYDRIC ALCOHOL AND β-SUBSTITUTED-α-CYANACRYLIC ACID

Hartmut Steppan, Wiesbaden; Albrecht Moschel, Kelkheim Taunus, and Walter Luders, Neu-Isenburg, all of Germany, assignors to Kalle Aktiengesellschaft, Rheingaustrasse, Germany

Filed Mar. 19, 1969, Ser. No. 808,666
Claims priority, application Germany, Mar. 20, 1968, P 17 72 003.5
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 **9 Claims**

Manufacture of a light-sensitive layer of polymers capable of being cross-linked under the action of light. Polymers of this type are esterification products of polyhydric alcohols with unsaturated carboxylic acids having at least one carbon-carbon double bond conjugated with the carboxyl group. The light-sensitive layer is especially suitable for the manufacture of printing plates and etch resists.

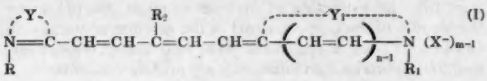
3,635,721

SPECTRALLY SENSITIZED PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Akiro Sato; Hiroshi Misu; Keisuke Shiba, and Masanao Hinata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

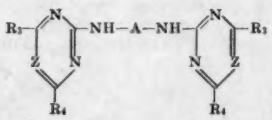
Filed Dec. 4, 1967, Ser. No. 687,469
Claims priority, application Japan, Dec. 3, 1966, 41/79255
Int. Cl. G03c *1/28, 1/20*
U.S. Cl. 96—126 **6 Claims**

A photographic silver halide emulsion composition comprising a sensitizing dye shown by general formula (I)



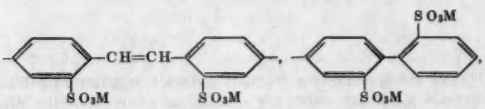
(I)

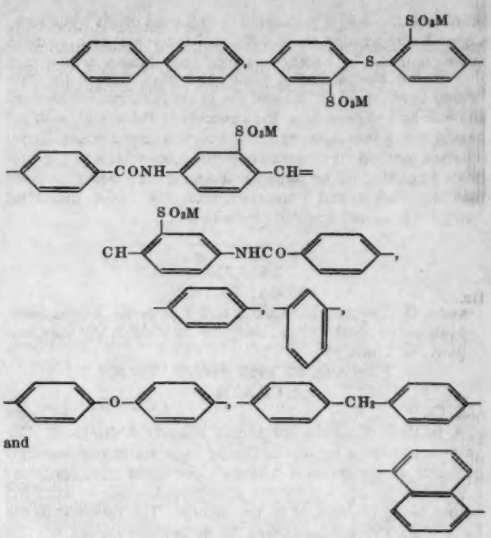
wherein Y and Y_1 each represents a nonmetallic atomic group necessary for forming a heterocyclic ring; R and R_1 each represents a member selected from the group consisting of an alkyl group, a substituted alkyl group, an aryl group, an allyl group and an aralkyl group; R_2 represents a member selected from the group consisting of a halogen atom and an alkyl group; X represents an anion, *n* stands for 1 or 2; and *m* stands for 1 or 2, and a compound shown by general formula (II)



(II)

wherein Z represents a member selected from the group consisting of CH and N; R_3 and R_4 each represents a member selected from the group consisting of a halogen atom, a hydroxyl group, an alkoxyl group, an aryloxy group, an arylthio group, an aryl group, an amino group, an alkylamino group, an arylamino group and an aralkylamino group; and A represents a member selected from the group consisting of:





and

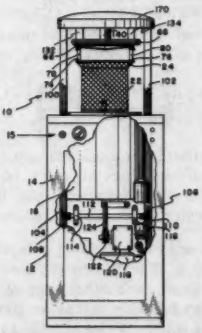
wherein M represents a member selected from the group consisting of a hydrogen atom, an alkali metal, ammonium, and an amino group.

3,635,722

METHOD OF PRESSURE COOKING FOODS

George A. Moore, 843 North Dellrose, Wichita, Kans.

Continuation-in-part of application Ser. No. 480,998, Aug. 19, 1965, now abandoned. This application Jan. 9, 1967, Ser. No. 608,168
Int. Cl. A22c *21/00*
U.S. Cl. 99—1 **2 Claims**



Deep fat pressure cooker apparatus including a power-driven cover that coacts with the cooking vessel in the manner of a piston and a cylinder to enable both the closure of the vessel and also the compression of the contents of the vessel to pressurize the latter. The apparatus also includes a food basket that is releasably coupled to depend from the cover, and which basket, if previously positioned in the vessel, is automatically coupled to the cover on the subsequent lowering of the latter.

The apparatus can be employed to practice several novel cooking methods. In one of these methods, the cover and the basket (the latter containing the foods to be cooked) coupled thereto are simultaneously lowered to simultaneously im-

merse the foods in a preheated cooking oil or fat while closing and compressing the contents of the vessel to pressurize such contents. In another method, the basket with foods therein are placed in the vessel and immersed in the preheated cooking oil or fat, and the cover is thereafter lowered to close and to pressurize the contents of the vessel, with the basket being then automatically coupled to the cover. In yet another method, the basket is initially immersed in the preheated cooking oil or fat, with the food then being dropped into the basket and immersed, with the cover thereafter being lowered and coupled to the basket.

3,635,723
ANIMAL RATION

Damon C. Shelton, St. Louis, and Curtis E. Blankenship, Manchester, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

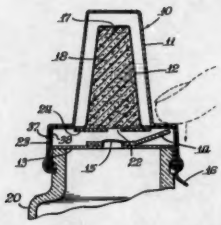
Filed Aug. 30, 1968, Ser. No. 756,405
Int. Cl. A23k *1/00*
U.S. Cl. 99—2 R **6 Claims**

A method of caring for axenic animals is disclosed. The animals are fed a ration containing their entire requirements of water and nutritional materials packaged in a container which can be opened by the animal and which is sterilized before being introduced to the animals. The ration is in the form of a stable gel containing 70–80 percent water.

3,635,724
NIPPLE CONTAINERS WITH STERILE OPENING DEVICES

Charles H. Schaar, Libertyville, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Aug. 12, 1964, Ser. No. 389,085
Int. Cl. B65b *25/02*; A61j *9/04, 11/04*
U.S. Cl. 99—171 ND **7 Claims**



Nursing unit for use in the feeding of liquid foods to infants wherein the unit has at least two separate and sterile compartments sealed from each other, one of which contains a liquid food, and an opening means located in either of the two compartments which can be actuated to create an opening between the two compartments without violating the sterility of either compartment. The nursing unit comprises in combination a sealed container enclosing liquid food in a sterile condition forming a first compartment and a nipple attached to the top of the sealed container to form with the top a second sterile compartment. The opening device acts upon a section of the top surface of the container to create an opening therein to provide a passageway for the liquid food from the container to the second compartment and the interior of the nipple. Nipple structures having venting means incorporated therein are provided for permitting venting of the unit during feeding, when necessary. Inexpensive nipples composed of a thin film shaped in the form of a teat and filled with a porous foam for use in the nursing unit are disclosed. An overcap for the nipple on the container is also provided to maintain the outer surface of the nipple sterile.

3,635,725
UREA GRAIN PRODUCT

Herbert A. Baskin, Covington, and Andrew B. Funk, Memphis, both of Tenn., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,437
Int. Cl. A23k *1/00*
U.S. Cl. 99—2 **5 Claims**

This invention is directed to the process of mixing molten urea with starch-containing material, e.g., grain, in the absence of added moisture and at atmospheric pressure to provide an improved feed product for ruminants. In the process, the starch of the grain becomes at least partially gelatinized. By processing of the urea and grain after admixture thereof, much higher relative amounts of urea may be combined with the grain without toxic effects on the ruminant upon feeding thereof and with more efficient utilization of the urea. A novel feature is that the product solidifies as it is cooled, and if this is solidification is accomplished with continued mixing, a semigranular product results, which requires grinding of only the oversize portion to yield a desirable product.

3,635,726
METHOD OF PRODUCING SOY PROTEIN CONCENTRATES

Louis Sair, Evergreen Park, Ill., assignor to The Griffith Laboratories, Inc., Chicago, Ill.

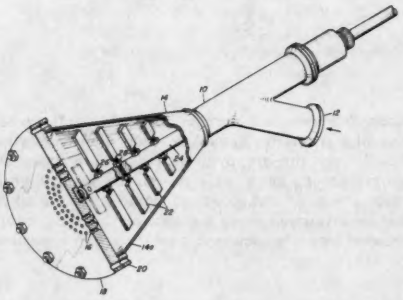
Filed Sept. 20, 1968, Ser. No. 761,282
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 **12 Claims**

A method of producing or recovering improved, soy protein concentrate compositions, suitable for use in food products for humans, consisting essentially of an edible, nutritious, uniformly palatable, debittered, bland, proteinaceous composition free of undesired, characteristic beany taste or flavor, which involves combining (a) highly proteinaceous, soy protein isolate recovered from a liquid extract from an extraction of soybean material at a pH above the vicinity of the isoelectric pH of the glycinin content, with (b) fibrous residue recovered from said last-mentioned extraction, to produce an improved, soy protein concentrate.

3,635,727
UNIFORMLY DISTRIBUTING ICE CRYSTALS IN A PARTIALLY FROZEN COFFEE EXTRACT SLUSH

Charles Warren Ehrgott, Rumson, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,407
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **3 Claims**



The ice crystals in a partially frozen concentrated coffee extract slush are uniformly distributed throughout the un-

frozen matrix and the apparent viscosity of the slush is reduced by an agitation procedure which facilitates extruding the slush into a cooling zone wherein the slush extrudates of uniform composition are subdivided and frozen to rigid solids. The method includes subjecting the slush to increasing amounts of mixing and shearing forces to uniformly distribute the ice crystals and then extruding the slush through an extruder die block under shear forces lower in magnitude than the shear forces before extrusion such that the slush reverts to a consistency at which the extrudates can be subdivided into pellets.

3,635,728

QUICK-COOKING SOYBEAN PRODUCTS

Louis B. Rockland, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of Agriculture

Filed Mar. 26, 1968, Ser. No. 716,232
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 **6 Claims**

Process for treating soybeans to remove bitterness and other undesirable taste qualities, and to tenderize the beans so that they can be cooked in a short time, all the while retaining the integrity of the beans. The procedural steps include a conditioning of the beans by a brief contact with boiling water, followed by soaking in an aqueous solution containing sodium chloride, a chelating agent, and an alkaline agent. The hydrated beans are then dried, for example, by contact with air at 130°–170° F. Alternatively, the hydrated beans may be preserved by freezing, or by partial dehydration followed by holding at refrigeration or even ambient temperatures.

3,635,729

INSTANT DEHYDRATED HASHED-BROWN POTATOES

William J. Englar, Idaho Falls, and Donald C. Dew, Shelley, both of Idaho, assignors to Western Farmers Association, Seattle, Wash.

Filed Oct. 30, 1969, Ser. No. 872,774
Int. Cl. A23b *7/03, 7/16;* A23l *1/12*
U.S. Cl. 99—207 **7 Claims**

A potato product in the form of strips, shreds or other pieces which are precooked and dehydrated into a form which may be readily rehydrated in water and browned in oil to form hashed-brown type potatoes. The method of producing the dehydrated hashed-brown potatoes comprises peeling fresh raw white potatoes, trimming and cutting the potatoes into strips, shreds, slivers or other pieces, blanching or precooking the cut potatoes, partially drying the precooked potato pieces, coating the precooked, partially dried potato pieces with starch and dehydrating the coated pieces in a nonagglomerated mass to a moisture content of 20 to 50 percent of the moisture contained in the fresh raw potatoes. The starch serves as a binding agent which upon rehydration of the potatoes causes the pieces to stick together for cooking in the manner of freshly made hashed-brown potatoes to form a cohesive mass which browns uniformly and is pleasing in taste and appearance.

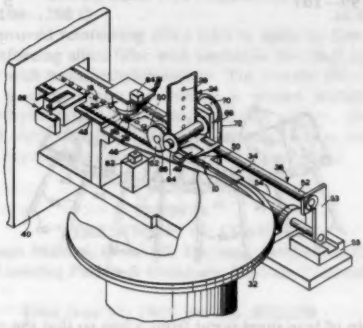
3,635,730

METHODS FOR SELECTIVELY COATING FERROMAGNETIC ARTICLES

Stanley E. Sweitzer, Laureldale, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,652
Int. Cl. B44d *1/18, 1/02*
U.S. Cl. 117—38 **8 Claims**

Ferromagnetic articles to be selectively coated are conveyed through a coating station by a belt which also serves to mask areas of the articles where coating material is not desired. The belt is in the form of an endless tape and coating material is continuously removed from the tape so that each article to be coated is presented with clean tape mask. Automatic apparatus is provided to magnetically lift the articles into engagement with the mask and a support track in coordination with feeding and indexing devices. A step near the end of the track permits the coated articles to drop free of the mask and accumulate in a magazine.

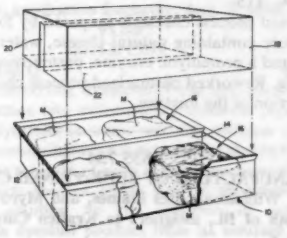


3,635,731

PROCESS FOR TENDERIZING MEAT

Charles W. Korten, Cinnaminson, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Mar. 18, 1969, Ser. No. 808,276
Int. Cl. A22c *18/00;* A23b *1/06*
U.S. Cl. 99—107 **2 Claims**

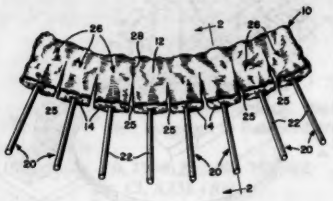


A process for mechanically tenderizing meat for human consumption after the carcass has been separated into primal cuts which have muscle fibers arranged substantially in the same direction, by applying pressure within the range of 50 to 100 pounds per square inch against two opposing surfaces of the meat cut perpendicularly to the direction of the muscle fibers, and preventing expansion of the cut in a direction across the fibers while permitting deformation in the direction of the muscle fibers. This invention provides apparatus for accomplishing the above process which includes a container having a width substantially the same as that of the meat cut measured across the grain and a length greater than the length of the cut measured in the direction of the fibers. A compressing plug presses the meat in the container causing the meat to deform in the direction of the fibers but not across the grain thereby disrupting and separating the connective tissue from the muscle fibers and rendering the meat more tender for human consumption. A pair of compressing rolls forming a nip is advantageously used on cuts having a thickness less than 2 inches.

3,635,732
METHOD OF PREPARING A MEAT PRODUCT

Joseph L. Bissett, 1410 N. Main St., Dayton, Ohio

Filed May 16, 1969, Ser. No. 825,150
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 5 Claims



A strip of lean meat is cut from a loin so that the width of the strip is substantially greater than its thickness, and a plurality of generally parallel skewers are inserted into the strip at longitudinally spaced intervals and provide handle portions projecting from one of the edge surfaces of the strip. Transverse slits are formed within the strip between the skewers and extend from one edge surface toward the other edge surface to provide connected strip sections on the skewers.

3,635,733
PREPARATION OF PROCESS CHEESE

Thomas P. Kichline, Chesterfield, and Lewis G. Scharpf, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 639,306, May 18, 1967, now abandoned. This application July 22, 1969, Ser. No. 843,849
Int. Cl. A23c *19/00*
U.S. Cl. 99—115 14 Claims

Pasteurized process cheese is prepared by forming an intimate mixture containing natural cheese, water, an emulsifying agent and a proteolytic enzyme; pasteurizing the mixture, and cooling. Reworked pasteurized process cheese may comprise a portion of the mixture.

3,635,734
MANUFACTURE OF BLUE-VEINED CHEESE

Wayne T. Williamson, Des Plaines, and Myro Purko, Evanston, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

Filed Aug. 19, 1968, Ser. No. 753,712
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 3 Claims

A method for producing blue-veined cheese wherein a suitable culture of a gas producing micro-organism is selected and is grown in a suitable media. The culture is then concentrated and added to the milk from which the blue-veined cheese is to be manufactured. The gas-producing micro-organism is selected to provide a desired level of gas during curing of the cheese.

3,635,735
PREPARATION OF CONFECTION COATED CHEWING GUM

Arvind Shankar Patil, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Apr. 8, 1970, Ser. No. 26,760
Int. Cl. A23g *3/30*
U.S. Cl. 99—135 6 Claims

Preparing confection coated gum balls by admixing water-containing saccharides with hot molten gum base, evaporatively cooling gum mass, forming balls, applying confection coatings to gum balls, vacuum drying coated gum balls, applying a finish coating to coated gum balls and thereafter vacuum drying the finish coated gum balls.

3,635,736
FLAVORING FOOD WITH A SUGAR DIALKYL DITHIOACETAL

Marvin L. Oftedahl, Warson Woods, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 11, 1968, Ser. No. 766,954
Int. Cl. A23l *1/26*; C07c *149/00*
U.S. Cl. 99—140 R 25 Claims

Method of imparting flavors and/or enhancing the flavors of food products by the addition of a small amount of a sugar dialkyl dithioacetal to said food products.

3,635,737
PARTICULATE CHEESELIKE COMPOSITIONS

Allen Baron, 187-D Mayhew Way, Walnut Creek, Calif.

Filed Apr. 25, 1969, Ser. No. 819,422
Int. Cl. A23l *1/22*; A23c *19/02*, *19/12*
U.S. Cl. 99—140 R 11 Claims

Cheeselike solids are produced by incorporating a minor amount of one or more of the C_4–C_8 monocarboxylic aliphatic acids into dry casein coagulate. The novel product is a free flowing palatable food.

3,635,738
PACKAGED MEAT PRODUCT AND PROCEDURE FOR MAKING IT

Robert G. Hofmann, 9362 Springfield Drive, Allison Park, Pa., and Richard E. Hofmann, 504 Wimer Circle, Pittsburgh, Pa.

Filed Sept. 2, 1969, Ser. No. 854,566
Int. Cl. A22c *13/00*
U.S. Cl. 99—169 8 Claims

Process meat and the like is provided with an outer edible, ply, layer or enclosure of a desired color that protects the meat, retains moisture therein, and provides a pleasing display package for the food product. Procedure is used in which a relatively thin, paperlike open end casing, membrane or bag is filled or stuffed with a ground meat type of food mixture, the open end of the bag is securely closed off, the mixture is cooked in the casing and cooled, the casing is then dipped within or covered with a somewhat viscous emulsion or mix which adheres thereto, and the article or food product is cooled to solidify the emulsion as a snowy white outer ply, layer or enclosure for the food product.

3,635,739

SILICA-FREE CALCIUM ALUMINATE GLASS-CERAMIC ARTICLES

John F. MacDowell, Painted Post, and Hermann L. Rittler, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 4, 1969, Ser. No. 830,523
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 DV 10 Claims

This invention relates to the manufacture of translucent-to-transparent glass-ceramic articles in the BaO-CaO-Al_2O_3 composition field which are nucleated with ZrO_2 and/or V_2O_5 nd/or Ta_2O_5. Such articles are thermally stable to temperatures up to about 1,400° C., exhibit good dielectric properties, are resistant to attack by alkali metal vapors, and transmit well in the infrared portion of the spectrum.

3,635,740

BASIC REFRACTORY SHAPES

Ben Davies, Pittsburgh, and George R. Henry, Bethel Park, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 1, 1970, Ser. No. 24,871
Int. Cl. C04b *35/42*
U.S. Cl. 106—59 4 Claims

Fired basic refractory shapes made from refractory brickmaking size-graded batches consisting of magnesite and chrome ore, the improvement being the inclusion of fireclay in the batch in amounts up to about 5 percent, by weight, and the two stage burning of resulting shapes to obtain high hot strength.

3,635,741

NOVEL CONVERTING STARCH

Chester D. Szymanski, Martinsville, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed Oct. 14, 1969, Ser. No. 866,386
Int. Cl. C08b *27/26*
U.S. Cl. 106—213 5 Claims

A novel converting starch product comprising a starch base which is admixed with a modifying agent, aqueous dispersions of which product display a high viscosity when first gelatinized but upon being cooked at retort temperatures are converted resulting in a dispersion exhibiting a substantially reduced viscosity. Such starch products find a particular use in the commercial preparation of foods.

3,635,742

CALCINING ALKALINE EARTH METAL CHLORIDES WITH CELLULOSE AND ADMIXING WITH PORTLAND CEMENT

Jiro Fujimasu, Tokyo, Japan, assignor to Fujimasu Industries International

Filed Aug. 14, 1969, Ser. No. 850,219
Int. Cl. C04b *13/22*
U.S. Cl. 106—287 15 Claims

A hydraulic composition for stabilizing soils comprising about 75 to about 95 parts by weight of a Component A and about 5 to about 25 parts by weight of a Component B. Component A comprises a calcined blend of 10–15 parts by weight of an alkaline earth metal chloride, 15–20 parts by weight of a vegetative or cellulosic material to produce carbon when component A is calcined, and 65–80 parts by weight of an alkaline earth metal hydroxide. component B comprises 5–90 parts by weight of Portland cement and 1–2 parts by weight of a lignin material derived from sulfite paper process waste, together with up to about 20 parts by weight of silica and/or up to about 60 parts by weight of an alkaline earth metal hydroxide such as slaked lime.

3,635,743

REINFORCING SILICA FILLER

Alfred H. Smith, Jonesville, N.Y., assignor to General Electric Company

Filed Jan. 6, 1969, Ser. No. 789,352
Int. Cl. C08h *17/04*; C09c *1/28*
U.S. Cl. 106—288 Q 10 Claims

An improved reinforcing silica filler is made by first treating a reinforcing silica filler with ammonia and then treating the filler with hexamethyldisilazane. The treated filler when used in a composition containing a silanol end-stopped polydimethylsiloxane curable to a silicone rubber, provides improved shelf stability of the curable composition and also provides improved strength in the cured composition.

3,635,744

TREATMENT OF CLAY

Peter James Malden, Cornwall, England, assignor to English Clays Lovering Pochin & Company, Limited, Cornwall, England

Filed June 11, 1969, Ser. No. 832,230
Claims priority, application Great Britain, June 14, 1968, 28,592/68
Int. Cl. C09c *1/42*
U.S. Cl. 106—288 B 11 Claims

A method of bleaching a clay which comprises forming an aqueous suspension of the clay and contacting said aqueous suspension of the clay with a gas comprising ozone.

3,635,745

PROCESS FOR CONVERTING DYESTUFFS OF THE ARYL-PARAROSANILINE SULFONIC ACID SERIES INTO VALUABLE PIGMENTS HAVING A HIGH TINCTORIAL STRENGTH

Heinz Rentel, Schonberg/Taunus, and Ernst Spietschka, Oberauroff, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 25, 1969, Ser. No. 845,094
Claims priority, application Germany, Aug. 3, 1968, P 17 69 912.6
Int. Cl. C09c
U.S. Cl. 106—288 Q 11 Claims

Process for converting dyestuffs of the aryl-pararosaniline sulfonic acid series into coloristically valuable pigments by dissolving the dyestuffs in water with the addition of alkalis, mixing the aqueous-alkaline solution of the dyestuff with an aqueous-alkaline solution of such natural resinic acids or acid modified products thereof which can be precipitated from their alkaline solution by the addition of acids, and precipitating the dyestuff product from its solution by addition of an acid. The products obtained according to the present invention are easily dispersible pigment powders having a high tinctorial strength and a soft grain.

3,635,746

DRY TRANSFER AND METHOD

Mac Karlan, 1700 Grand Concourse, Bronx, N.Y.

Filed Oct. 19, 1966, Ser. No. 857,751
Int. Cl. B41m *5/02*; C08c *11/70*
U.S. Cl. 117—3.1 8 Claims

A nontacky adhesive coating composition for use over indicia on a surface of a dry transfer sheet, the adhesive comprising by weight 50 to 90 percent wax, 1 to 10 percent of a

pentaerythritol ester of rosin, 5 to 30 percent of a pressure-sensitive adhesive, from 0.5 to 5 percent of an amino-substituted alkanol and from 0.5 to 5 percent of an alkaline hydroxide.

3,635,747

DONOR-RECEPTOR COPY PAPER

Hugh B. Skees, Arlington Heights, and John D. Mays, Dayton, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed July 11, 1969, Ser. No. 841,153

Int. Cl. B41m *5/10*

U.S. Cl. 117—36.3 **4 Claims**

A pressure-responsive image transfer system of the donor-receptor manifold variety comprising a web-carried donor coating composed of an aqueous dispersion of a major weight proportion of kaolin or aluminum silicate, a minor proportion of carbon black and/or nominal amounts of a water-soluble dye and a dispersing agent admixed with a binder consisting of a dispersion of polyethylene in an aqueous solution of polyvinyl alcohol for use in combination with a juxtaposed web-carried receptor coating such as a hot-melt mixture of a major weight proportion of paraffin and a minor proportion of ethylene vinyl acetate copolymer or an aqueous dispersion of a major weight proportion of polyethylene and a minor weight proportion of ethylene vinyl acetate copolymer.

ERRATUM

For Class 117—46 see:
Patent No. 3,635,730

3,635,748

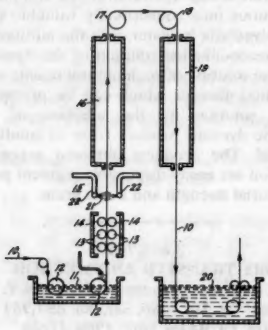
METHOD FOR TREATING A FLUX COATING

Richard A. Peoples, Hamburg, N.Y., assignor to Bethlehem Steel Corporation

Filed Nov. 29, 1968, Ser. No. 780,062

Int. Cl. C23c *13/02;, 3/00*

U.S. Cl. 117—46 FA **5 Claims**



A method for providing a smooth coating of flux material uniformly distributed on a metal surface comprising directing a flame onto the flux-coated surface. The apparatus comprises a flame distributor adapted to contact the surface of the flux coating with a high-heat flame. The impingement of the flame on the flux surface causes an initial set in the flux surface which is smooth and evenly distributed.

3,635,749

PROCESS FOR IMPROVING ADHESION OF VINYL RESINS TO A POLYAMIDE AND RESULTANT PRODUCT

William P. Eaddy, Columbia, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 18, 1969, Ser. No. 808,307

Int. Cl. B44d *1/14;* **B32b** *27/34, 27/30*

U.S. Cl. 117—76 T **11 Claims**

A process, and the resulting products, of treating polyamide structures to improve their bonding characteristics to vinyl resins wherein a surface of the polyamide structure is coated with a first coating of a polyalkylenimine compound and the coating is treated to substantially fully react the coating with the polyamide structure, and thereafter a second coating of a polyalkylenimine compound is applied thereto and dried or partially cured thereon to provide improved adhesion of the polyamide structure to a vinyl resin.

3,635,750

PHOTOPOLYMERIZED COPOLYMER FILMS

Archibald N. Wright, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 530,950, Mar. 1, 1966, now abandoned. This application Dec. 29, 1969, Ser. No. 888,372

Int. Cl. B44d *1/50;* **C08f** *1/18*

U.S. Cl. 117—93.31 **5 Claims**

Copolymer films are provided which are made by the surface photopolymerization of vaporous mixture of a diene such as butadiene and a vinyl monomer, for example acrylonitrile. The copolymer films exhibit valuable insulating properties and have a dielectric constant over the range of from about 2.65 to about 5.9.

3,635,751

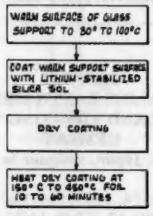
LITHIUM SILICATE GLARE-REDUCING COATING AND METHOD OF FABRICATION ON A GLASS SURFACE

George E. Long, III, Lititz; Francis D. Grove, Felton, and Donald W. Bartch, Columbia, all of Pa., assignors to RCA Corporation

Filed Apr. 3, 1969, Ser. No. 813,043

Int. Cl. B44d *1/46, 1/08*

U.S. Cl. 117—94 **7 Claims**


WARM SURFACE OF GLASS SUPPORT TO 30° TO 100°C
COAT WARM SUPPORT SURFACE WITH LITHIUM-STABILIZED SILICA SOL
DRY COATING
HEAT DRY COATING AT 150° C TO 450°C FOR 10 TO 60 MINUTES

A novel optical screen comprises, as its viewing surface, a hard, abrasion-resistant coating having a rough, glare-reducing surface and composed of a lithium silicate material. The screen may be prepared by a novel method comprising: (a) warming the surface of a glass support to about 30° to 100° C., (b) coating the warm surface with an aqueous solution containing about 1 to 10 weight percent of a lithium-stabilized silica sol, (c) drying the coating, and then (d) heating the dry coating at about 150° C. to 450° C.

3,635,752
PROCESS FOR THE PREPARATION OF GLASS-CONCENTRATE CAPSULES IN A POLYVINYL CHLORIDE MATRIX

Massimo Baer, Longmeadow, and Joseph O. Campbell, Agawam, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 4, 1969, Ser. No. 873,805
Int. Cl. B44d *1/02*; C08f *1/84*
U.S. Cl. 117—100 S **12 Claims**

Disclosed herein is a process for the preparation of glass-concentrate capsules which comprise a plurality of strands of glass fibers encapsulated in a collimated array within a vinyl chloride polymer matrix which process comprises:

1. Forming a suspension of strands of glass fibers in a vinyl chloride monomer/water mixture containing a critical amount (viz., from 0.05 to 2.0 percent by weight based on the total weight of monomer and glass) of protective colloid;
2. Agitating the suspension using a low-shear type of agitation which moves the whole suspension pass while avoiding localized high-shear agitation;
3. Polymerizing the monomer; and
4. Recovering the glass-concentrate capsules.

3,635,753
GROWTH OF NEEDLELIKE VLS CRYSTALS

John R. Arthur, Jr., Murray Hill, and Richard S. Wagner, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original application Sept. 21, 1967, Ser. No. 669,535, now Patent No. 3,505,127, dated Apr. 7, 1970. Divided and this application Sept. 24, 1969, Ser. No. 862,156
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 A **2 Claims**

Single crystal material of needlelike form may be obtained by means of the vapor-liquid-solid crystal growth technique, growth parameters of the growing crystalline material being controlled so as to result in the removal of the impurity agent and the concomitant decrease in the volume of the liquid solution and growth of crystalline materials evidencing sharp terminations.

3,635,754
ADHESIVE PRODUCT

Charles H. Beede, East Brunswick, N.J., assignor to Johnson & Johnson

Continuation-in-part of application Ser. No. 522,037, Jan. 21, 1966, now abandoned. This application Feb. 10, 1969, Ser. No. 798,110
Int. Cl. C09j *7/04*
U.S. Cl. 117—122 H **16 Claims**

Heat-activated temporary pressure-sensitive adhesives are prepared which are activated through heating and on activation take on all of the characteristics of conventional pressure-sensitive adhesives which characteristics they maintain over substantial periods of time after cooling back to their initial temperature prior to the heat activation. The pressure-sensitive adhesives after activation are pressure sensitive in character exhibiting internal strength and the other characteristics of good pressure-sensitive adhesives and in this way they differ substantially from thermoplastic or hot melt adhesives which generally have substantial loss in internal strength becoming stringy and leggy in character when heated to a temperature at which they will bond to other surfaces. The temperature-activated pressure-sensitive adhesives obtain their temperature activation characteristics through the presence of an organic polymer or polymers having in balance at room temperature, prior to heat activation, an ordered or crystalline phase and a disordered or amorphous phase and having a first-order transition temperature or melting point of 35° C. or higher and a second-order transition temperature or glass temperature of 5° C. or lower. The organic polymer or polymers have little to no tack at room temperature and remain in this state until activated by heating and on activation becoming aggressively tacky, exhibiting good pressure-sensitive adhesive characteristics and maintaining such aggressive tackiness and good pressure-sensitive adhesive characteristics for an extended period of time after cooling back to room temperature after which period of time the organic polymer or polymers return to a state of little or no tack.

3,635,755
PRESSURE-SENSITIVE ADHESIVE POLYOLEFIN COMPOUNDS

Ivan J. Balinth, Cranford, and Charles H. Beede, East Brunswick, both of N.J., assignors to Johnson & Johnson

Continuation-in-part of application Ser. No. 483,344, Aug. 27, 1965, now abandoned. This application Feb. 10, 1969, Ser. No. 798,152
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P **10 Claims**

Pressure-sensitive adhesive sheets including adhesive tapes, adhesive drapes, adhesive bandages and the like are prepared by coating onto a flexible backing a polyolefin polymer having an intrinsic viscosity of 2.0 to 5.0, a molecular structure in which 40 to 75 percent is isotactic with the remainder containing no more than 20 percent atactic or random and a Williams' plasticity after aging on the backing of 1.5 to 3. The polyolefin polymer is prepared by polymerizing olefin monomers of two to 16 carbon chain length in the presence of a Ziegler-Natta type catalyst formed through the reaction of a transition element compound containing metal of Group IV through VI of the Mendeleff Periodic Table with an organometallic compound of a metal of Group I through III. Some of both compounds are present at the initiation of the polymerization reaction with further transition element compound being periodically added during polymerization. In an example given titanium tetrachloride is used as the transition element compound and triisobutylaluminum used as the organometallic compound in preparing the catalyst. The olefinic polymer may be a homopolymer in which instance it would be prepared from olefin monomer of six to 11 carbons and could be represented by the general formula:

$$-(CH_2-\underset{\displaystyle(CH_2)_n}{\underset{|}{\overset{|}{CH}}}-)_x$$
$$\qquad\qquad\quad H$$

when n is an integer of 3 to 8 and x represents a repetition of the group to a molecular weight sufficiently high to give a polymer within the intrinsic viscosity range indicated or the polymer may be an interpolymer formed through the interpolymerization of two or more olefin monomers of carbon chain length of two to 16 carbons. In such case a representative formula may be shown as follows:

$$-(CH_2-\underset{\displaystyle(CH_2)_n}{\underset{|}{\overset{|}{CH}}}-)_x$$
$$\qquad\qquad\quad H$$

in which n has a numerical value of 3 to 14. The designation x represents interpolymerizatiion with sufficient unit buildup to a polymer of molecular weight sufficiently high to give an interpolymer with an intrinsic viscosity within the range indicated. Thus, for example, where ethylene is used as one of the monomers it would be used with other olefin monomer or monomers of sufficiently long side chain to give in the monomer mix a value to n of at least 3.

3,635,756
NONFOGGING TRANSPARENT MATERIAL

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Original application June 21, 1968, Ser. No. 738,887, now Patent No. 3,448,215, which is a continuation-in-part of application Ser. No. 567,856, July 26, 1966, now Patent No. 3,520,949, and a continuation-in-part of 650,259, June 30, 1967, now abandoned, and a continuation-in-part of 654,044, July 5, 1967. Divided and this application July 28, 1969, Ser. No. 845,283

Int. Cl. C03c *17/28*

U.S. Cl. 117—124 D 6 Claims

A transparent nonfogging coating is applied to a normally fogging transparent or reflecting substrate. The nonfogging coating preferably comprises a hydrophilic acrylate or methacrylate polymer. The polymer can be modified by copolymerization with a monobasic or polybasic unsaturated carboxylic acid or partial ester thereof. The polymer can be cross-linked with a polyepoxide to increase its hardness.

Typical substrates include automobile, train and airplane windows, sunglasses, camera lens, microscope lens, binocular lens, telescope lens, meat wrappers, diving masks, ski glasses, mirrors.

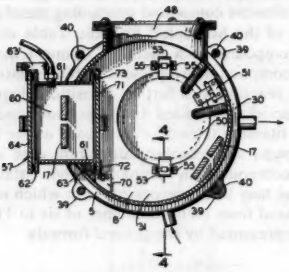
3,635,757
EPITAXIAL DEPOSITION METHOD

Darrell M. Harris, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Original application July 29, 1965, Ser. No. 475,722, now Patent No. 3,491,720. Divided and this application Apr. 1, 1969, Ser. No. 841,167

Int. Cl. H01b *1/06*; H01l *7/36*

U.S. Cl. 117—201 3 Claims



A method for the epitaxial deposition of epitaxial coatings on a semiconductor member. The method comprises the supporting of semiconductor members on a bridge-type element and introducing the bridge element into a reactor housing having three chambers. The bridge is placed in a first chamber where a purging gas is introduced for purposes of purging the semiconductor member. The bridge is then placed in a second chamber which is isolated from the first chamber and a purging gas is introduced into the second chamber for further purging the semiconductor member. Finally, the bridge is passed into a third chamber which is isolated from the first and second chambers. Feed gases are introduced into the third chamber for causing an epitaxial coating material to be deposited on the semiconductor member. The bridge is then removed from the third chamber and through the first and second chambers to the atmosphere external to each of said chambers.

3,635,758
ELECTROLESS METAL DEPOSITION

Frederick W. Schneble, Jr., Oyster Bay, L.I.; John F. McCormack, Roslyn Heights, and Rudolph J. Zeblisky, Hauppauge, all of N.Y., assignors to Photocircuits Corporation, Glen Cove, N.Y.

Continuation-in-part of application Ser. No. 523,902, Feb. 1, 1966, now abandoned. This application Aug. 4, 1969, Ser. No. 847,421

Int. Cl. B44d *1/18*; C23c *3/02*

U.S. Cl. 117—212 9 Claims

An improved method for enhancing the ductility of electroless metal deposits is provided in which an electroless metal bath contains an extraneous ion which has a preferential capacity for being coulombically adsorbed at the outer layer of an electric double layer present on an interface in contact with such bath on which said metal is electrolessly depositing, such ion being present in an amount sufficient to reduce the inclusion of hydrogen in the electrolessly deposited metal.

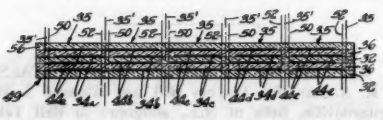
3,635,759
METHOD OF ELIMINATING VOIDS IN CERAMIC BODIES

Glenn N. Howatt, Metuchen, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Apr. 4, 1969, Ser. No. 813,472

Int. Cl. H01g *13/04*

U.S. Cl. 117—212 11 Claims



A method of making a high-density monolithic ceramic body where the body comprises a multiplicity of ceramic layers with one or more metallic coatings or layers on predetermined ceramic layers inside the body, each coated layer being initially separately formed by applying a flowable mixture of raw ceramic particles, binder and solvent upon a support surface or subjacent dried metal coated ceramic layer, drying the same, applying a metallic coating to the previously dried layer of ceramic material, drying the same, and repeating these operations until a lamina of desired thickness is formed having the appropriate number of interleaved metallic coatings. During the formation of the lamina, gross voids caused by the dripping of solvent into the subjacent layer or layers and replacement thereby by air are eliminated by providing the support surface with small air suction openings through which flowable ceramic cannot pass and drawing air through the one or more dried layers to eliminate the formation of air pockets in the uppermost flowable ceramic material by preventing air from within the porous dried subjacent layer from displacing the solvent in the flowable layer. Voids formed in the process of firing raw ceramic bodies with metallic coatings or layers therein, whether formed by the above or other processes, are reduced or eliminated after the raw ceramic firing operation by a process involving the initial complete encasement of the metallic coatings or layers by raw ceramic material before the firing operation so that after the firing operation the metallic coatings are completely encased by a gastight shell or cured ceramic material. The fired bodies of ceramic material are then placed in a pressure chamber and heated therein to a temperature which softens the ceramic body so that pressure on the shell compresses and compacts the body of ceramic material to increase its density.

3,635,760

FORMATION OF PLANES FACILITATING THERMIONIC EMISSION

Laurence Van Someren, Wayland, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Nov. 18, 1968, Ser. No. 776,763
Int. Cl. C23c 13/00
U.S. Cl. 117—213 4 Claims

A method for improving emission from the surfaces of cathodes in electron-emission devices such as thermionic converters in which a large flux of atoms or molecules of material is condensed upon a substrate to produce a surface bounded primarily by crystallographic planes of maximum atom density. The flux may be produced by evaporation from a source which need have no particular crystal orientation and which is held at a higher temperature than the substrate, the substrate being at a temperature which is a fraction of the melting point of the material being evaporated. In the case of body-centered cubic metals such as tungsten the planes produced are (110) planes. In some instances, it is desirable to roughen the surface of the substrate as by abrasion or sand blasting to facilitate the development of the planes of high atom density and accordingly, favorable work function.

3,635,761

ELECTROLESS DEPOSITION OF METALS

Werner O. Haag, Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 647,222, June 19, 1967, now abandoned. This application May 5, 1970, Ser. No. 34,863
Int. Cl. C23c 17/02
U.S. Cl. 117—227 20 Claims

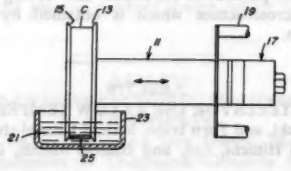
This specification discloses a method for electroless deposition of a metal upon a substrate. The substrate is one that has a catalytic surface capable of influencing deposition of the metal. The method involves mixing the substrate with a solution comprising a π-complex of the metal to be deposited on the substrate dissolved in a nonaqueous solvent. There is also added to the solution a reducing agent such as hydrogen. The reducing agent effects reduction of the complex thereby decomposing the complex to form elemental metal. The elemental metal then deposits on the substrate.

3,635,762

ULTRASONIC CLEANING OF A WEB OF FILM

Howard F. Ott, Victor, and Jerry Carmen, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 879,680, Nov. 25, 1969. This application Sept. 21, 1970, Ser. No. 73,994
Int. Cl. B08b 7/02
U.S. Cl. 134—1 9 Claims



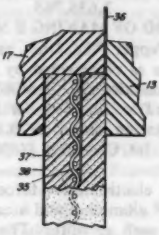
Dirt particles are cleaned from a web of flexible material, such as photographic film or paper, by applying ultrasonic vibrations to a web in a direction transversely of the web while applying a solvent liquid to the web. The liquid can be applied by immersion of the web and ultrasonically vibrating apparatus in a pool, or by spraying the liquid onto the web as it passes over the apparatus in air. Vibrations are imparted by passing the web between a pair of shoulders defining a circular channel for the films.

3,635,763

FUEL CELL ELECTRODE

Leonard W. Niedrach, and Willard T. Grubb, both of Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 26, 1967, Ser. No. 693,635
Int. Cl. H01m 27/04, 13/00
U.S. Cl. 136—86 D 12 Claims



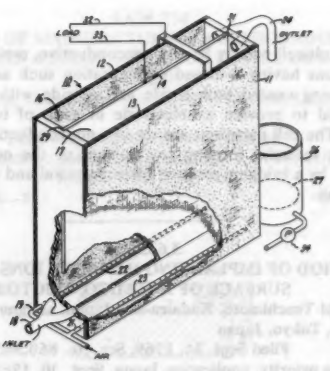
Fuel cell electrodes are composed of a mixture of catalytic and gas adsorbing materials which consist of a chromium-tungsten oxide and a metal dispersed on a support, the metal selected from the class consisting of noble metals and alloys of noble metals, with a current collector, and a binder bonding the materials together and to the current collector in electronically conductive relationship. An adhesive binder is employed which is not chemically attacked by the electrolyte or the reactant fluid of the cell in which the electrode is used. Such an electrode is particularly useful in a fuel cell employing a fuel containing carbon monoxide, such as reformer gas, an acid electrolyte, and under various operating conditions.

3,635,764

COMBINED WASTEWATER TREATMENT AND POWER GENERATION

James L. Setser, Schenectady, and Eugene P. Schneider, Jr., Webster, both of N.Y., assignors to General Electric Company

Filed Jan. 2, 1969, Ser. No. 788,579
Int. Cl. H01m 29/04
U.S. Cl. 136—86 A 6 Claims



Both apparatus and a method for the treatment of domestic wastewater are described. A substantial reduction

in refractory nutrient content of such waters is effected by the addition of an electrolyte, if needed, and passage of the wastewater through battery-cell structure having as one electrode thereof a metal the oxide of which, when formed in water, acts as a flocculent. Air introduced into the cell prevents suspended sludge from settling in the cell and provides (or supplements) the depolarizing oxidant. Conduct of the process simultaneously produces direct current electrical power, as well, which may be employed to release chlorine from an aqueous chloride solution for combating pathogenic organisms in the wastewater.

3,635,765

METHOD OF MAKING E M F CELL

Jacob Greenberg, Pepper Pike, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Dec. 30, 1968, Ser. No. 787,911. Divided and this application June 5, 1970, Ser. No. 57,399
Int. Cl. H01m *31/00*
U.S. Cl. 136—83 R 2 Claims

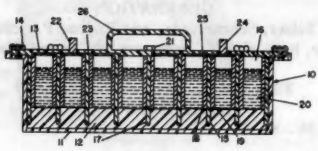
A heat-activated electromotive force (e.m.f.) cell having an anode formed of aluminum and a cathode comprising an oxidizing material such as sulfur. The cathode material is supported in a container or in a matrix such as porous carbon. An aluminum salt layer electrolyte such as AlCl separates the anode from the cathode. To minimize vaporization of the aluminum salt, an alkali halide salt may be mixed therewith. The cell may be operated at temperatures up to a point where either the cathode material or the electrolyte is molten.

3,635,766

ELECTROCHEMICAL BATTERIES

Sverre Quisling, 1240 Sherman Ave., Madison, Wis.

Filed June 25, 1969, Ser. No. 836,384
Int. Cl. H01m *17/00*
U.S. Cl. 136—100 1 Claim



A multicell battery having nonconductive, replaceable cell partitions having a closed configuration such as cylindrical and being coated both inside and outside with conductive material to provide an electrode in each of two adjacent cells. The cell partitions are set in a nonconductive yieldable sealing material forming the bottom of the cells and are united by a bridging element for withdrawal and replacement as a unit.

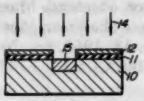
3,635,767

METHOD OF IMPLANTING IMPURITY IONS INTO THE SURFACE OF A SEMICONDUCTOR

Takashi Tsuchimoto, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 860,583
Claims priority, application Japan, Sept. 30, 1968, 43/70129
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 7 Claims

Disclosed is a method of implanting impurity ions wherein such ions are implanted into the surface of a semiconductor partially exposed by a hole in two layers, one being made of



silicon oxide and the other being made of a metal such as aluminum.

3,635,768

MOLTEN SALT CARBURIZING PROCESS AND REPLENISHING SALT FOR SAME

Johannes Mueller, Frankfurt am Main, Germany, assignor to Deutsche Gold-und Silber-Scheidean-stalt vormals Roessler, Frankfurt am Main, Germany

Filed Apr. 29, 1969, Ser. No. 820,337
Int. Cl. C23c *9/12*
U.S. Cl. 148—15.5 1 Claim

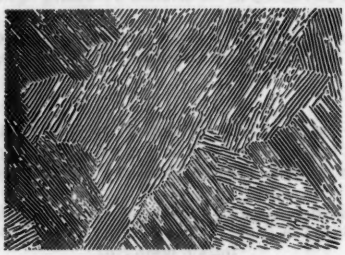
Carburizing of metals is effected by using molten cyanide baths containing activators. In the operation of such baths, due to consumption of the cyanide, it is necessary to add replenishing materials. The replenishing material is a mixture of activator and cyanide salt only, wherein the activator cyanide salt proportion is identical to that of the starting salt.

3,635,769

NICKEL-CHROMIUM EUTECTIC ALLOY

Bevil J. Shaw, Turtle Creek, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1969, Ser. No. 851,859
Int. Cl. C22c *19/00*
U.S. Cl. 148—32 4 Claims



A nickel-chromium alloy consisting of about 50 percent of nickel and 50 percent of chromium and having an oriented lamellar microstructure which is obtained by directional solidification.

3,635,770

ALLOY STEELS FOR USE AT LOW TEMPERATURES

Ryoichi Sasaki, and Toru Irino, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 457,167, May 19, 1965, now abandoned. This application Aug. 29, 1969, Ser. No. 854,265
Claims priority, application Japan, May 20, 1964, 39/28148; Mar. 31, 1965, 40/18294
Int. Cl. C22c *39/20*
U.S. Cl. 148—36 8 Claims

An alloy steel for use in a low-temperature region consisting of C in the range from 0.02% to 0.2% Ni in the range

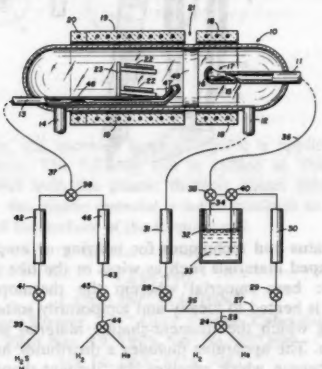
from 3% to 8%, Cu in the range from 0.8% to 4%, Al in the range from 0.005% to 0.3%, Si in the range from 0.05% to 0.15%, Mn in the range of 0.2% to 1.2%, and the balance iron and impurities, of which the transition temperature is lower than −196° C., a charpy impact value is greater than 2.1 Kg.-m. at said temperature and a tensile strength greater than 73 kg./mm.² at 20° C.

3,635,771

METHOD OF DEPOSITING SEMICONDUCTOR MATERIAL

Don W. Shaw, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 21, 1968, Ser. No. 730,804
Int. Cl. H01l 7/36; C23c 11/00; H01l 3/00
U.S. Cl. 148—175 **10 Claims**



An improved method of depositing a semiconductor material from a gaseous reactant stream containing unwanted contaminants onto a substrate by contacting the gaseous reactant stream from which the semiconductor material is to be deposited with a solid form of the same semiconductor material before the gaseous reactant stream is passed over the substrate. The solid semiconductor material, for example, gallium arsenide, may take the form of a layer of gallium gallium coated on the wall of a reactor within which the deposition of gallium arsenide is to be made, the coating being formed at a point between the source of the gaseous reactant stream and the substrate so that the gaseous reactant stream will pass over the coating before encountering the substrate. Impurities in the gaseous reactant stream will be absorbed by the coating of gallium arsenide thus reducing the level of impurities in the gaseous reactant stream before it reaches the substrate.

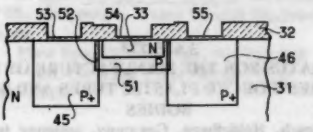
3,635,772

METHOD OF MANUFACTURING SEMICONDUCTOR COMPONENTS

Jean-Pierre Pestie, Orsay, and Jean Belmas, Massy, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Apr. 10, 1969, Ser. No. 815,140
Claims priority, application France, May 8, 1968, 151075
Int. Cl. H01l 7/44
U.S. Cl. 148—187 **1 Claim**

With a view to carrying out successive treatments on the semiconductor component, the insulating layer of the said component is removed during a preliminary litho-engraving operation on the parts to be opened up later. The procedure can be applied to great advantage to plane structure high-frequency components in which the active base is prolonged



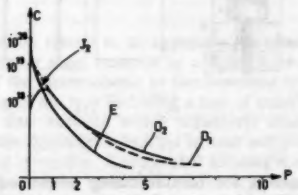
by a peripheral part having an increased concentration of impurities, on which electrical connection is easier.

3,635,773

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A ZENER DIODE AND SEMICONDUCTOR DEVICE MANUFACTURED BY USING THIS METHOD

Jacques Thire, Caponiere-Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1968, Ser. No. 783,620
Claims priority, application France, Dec. 14, 1967, 132205
Int. Cl. H01l 7/36
U.S. Cl. 148—191 **8 Claims**



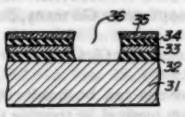
A method for the manufacture of a Zener diode having a breakdown voltage in the range of 2.5 to 6 volts is described. This is obtained by using diffusion processes to form an abrupt PN-junction. The abrupt PN-junction results from out-diffusion of first impurities causing a reversed concentration gradient in a surface layer and in-diffusion of second impurities into that surface layer producing large concentration gradients that are opposite to one another. The method described is especially useful for the incorporation of Zener diodes in monolithic integrated circuits.

3,635,774

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND A SEMICONDUCTOR DEVICE OBTAINED THEREBY

Masaya Ohta, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1968, Ser. No. 725,641
Claims priority, application Japan, May 4, 1967, 42/28090
Int. Cl. H01l 7/50, 7/00
U.S. Cl. 156—17 **8 Claims**



A method of manufacturing a semiconductor device comprising selective etching of a phosphorus glass layer covering

the surface of a semiconductor substrate using a silicon nitride film selectively formed on said glass layer as a mask.

3,635,775

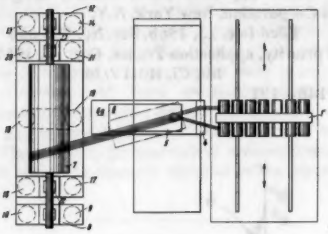
APPARATUS FOR THE MANUFACTURE OF FIBER GLASS REINFORCED PLASTIC TUBES AND SIMILAR BODIES

Ludwig Wesch, Heidelberg, Germany, assignor to Mancar-Trust, Vaduz, Liechtenstein

Original application Mar. 17, 1967, Ser. No. 624,065, now Patent No. 3,586,561. Divided and this application Oct. 29, 1969, Ser. No. 871,803

Int. Cl. B31c *3/00, 13/00, 9/00*

U.S. Cl. 156—429 **7 Claims**



An apparatus for manufacturing reinforced fiber glass tubes including the step of spooling a plurality of roving strands impregnated with liquid synthetic resin onto a rotatably mounted and vertically adjustable winding cylinder drum. The roving strands are either first passed through at least one impregnating bath prior to being spooled onto said drum, or they are passed through at least one heating installation where the synthetic resin of the already impregnated roving strands is softened prior to the spooling of the impregnated roving strands onto said drum, onto which said roving strands are directly guided from said impregnating path, respectively heating installation; thereafter the roving strands pass through other means forming part of the overall apparatus.

3,635,776

PRODUCTION OF BONDED NONWOVENS BY THE WET METHOD

Rudolf Stephan, Ludwigshafen; Gerhard Welzel, Mannheim; Hans Reinhard, Limburgerhof, and Hans-Ulrich Frank, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed June 27, 1969, Ser. No. 837,312

Claims priority, application Germany, June 29, 1968, P 17 69 700.6

Int. Cl. C09j *5/04*

U.S. Cl. 156—315 **8 Claims**

Bonded nonwovens can be produced with particular advantage by the wet method by treating the textile fibers prior to the addition of the binder polymers with water-soluble cationic polycondensation products which have been prepared from carbamides, formaldehyde, dicyanodiamide and salts of ammonia or of amines.

3,635,777

APPARATUS FOR EMPLACING FILAMENT-SHAPED MATERIALS INTO THERMOPLASTIC MATERIALS, METHODS FOR USING SAID APPARATUS AND PRODUCTS PRODUCED THEREBY

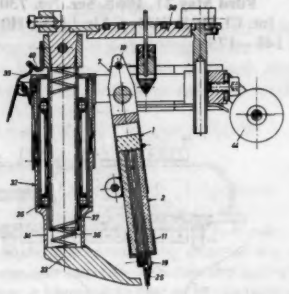
Walther Bethge, CH 4053, Bruderholzstr, 40, Basel, Switzerland

Filed May 20, 1968, Ser. No. 730,236

Claims priority, application Germany, May 20, 1967, B 92630

Int. Cl. B30b *5/00;* **B32b** *31/00*

U.S. Cl. 156—499 **27 Claims**



Apparatus and techniques for inlaying or emplacing filament-shaped materials such as wires or the like into a thermoplastic base material wherein the thermoplastic base material is heated to locally and temporarily soften the same following which the filament-shaped material is impressed thereinto. The apparatus includes a distributor having guide means thereon which receives the filament-shaped material from a source of the same, the lower portion of the guide means defining a sliding foot which is heated to soften the base material immediately before impressing the same with the filament-shaped material. The distributor is positioned at an angle with respect to the upper surface of the base material, the inclination of which may be adjusted to maintain the sliding foot portion in alignment with an axis of rotation about which the distributor may be turned 180° for reverse movement of the apparatus. The base material is supported in a manner whereby it may be offset stepwise on reversal of the distributor. Sensing means are provided to automatically raise and lower the sliding foot portion of the distributor in response to changes in the level of the upper surface of the base portion. The distributor may be lifted and latched in a position spaced from the base material during temporary interruptions in emplacing the filament-shaped material into the base material.

3,635,778

APPARATUS FOR MAKING PICTORIAL PARALLAX PANORAMAGRAM UNITS

Harold D. Rice, Leawood, Kans., and Sam L. Leach, St. Louis, Mo., assignors to Pid Corporation, Beverly Hills, Calif.

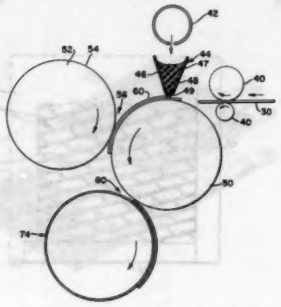
Original application May 14, 1962, Ser. No. 202,930, now Patent No. 3,241,429, dated Mar. 22, 1966. Divided and this application Jan. 6, 1965, Ser. No. 436,976

Int. Cl. B29b ; B32b *31/00*

U.S. Cl. 156—500 **3 Claims**

Apparatus for making pictorial parallax panoramagram units wherein a coating roll, a pressure roll and a forming roll are mounted in parallel relationship to form a pair of spaced-apart nips, the first such nip being formed between the coating roll and the pressure roll and the second such nip being formed between the pressure roll and the forming roll. The

coating roll is heated and a metering means cooperates therewith to form a predetermined thickness of plastic material which is fed to the first nip. A backing sheet is fed by suitable means through the first and second nips, and at



the first nip, the metered layer of plastic is applied to the backing sheet. The forming roll is chilled so that as the backing sheet with the plastic thereon passes through the second nip, the plastic material is set to conform to the configuration of the surface of the forming roll.

3,635,779

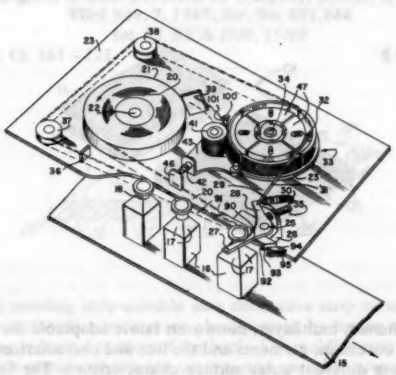
LABELING MACHINE

Mose Coleman Cooper, 1257 Gurr Avenue, Columbus, Ga.

Filed Nov. 19, 1969, Ser. No. 877,899

Int. Cl. B65c *9/18, 9/42*

U.S. Cl. 156—542 **5 Claims**



Pressure-sensitized labels on a carrying tape are brought stepwise to a label-affixing zone through which filled containers are moved, such containers having curved or flat surfaces for receiving the labels, means being provided for stripping the labels from the tape and simultaneously directing the labels to the container surfaces, thereupon affixing such labels by pressure means to such surfaces and means being provided for activating the label supply means by action of the containers in moving through the label-affixing zone.

3,635,780

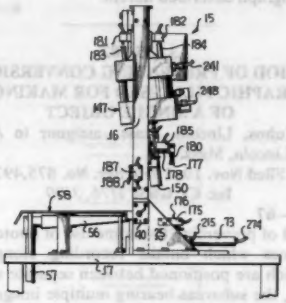
BONDING MACHINE FOR FABRICS WITH LOCATING AND AUXILIARY BONDING MEANS

Richard V. Griggs, Palatine, and John G. Attwood, Oak Park, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed Feb. 12, 1968, Ser. No. 704,840

Int. Cl. B30b *15/34;* **B32b** *31/20*

U.S. Cl. 156—583 **16 Claims**



This invention relates to an apparatus for bonding textile fabrics or similar sheet material by utilizing heat-activatable adhesives of the thermoplastic or thermosetting type, the apparatus being of the type including a pair of relatively movable presser bars between which adhesively coated lapped portions of the sheets are subjected to heat and pressure during a bonding operation. A retractible locating mechanism is provided adjacent the lowermost, stationary presser bar for accurately positioning an edge portion of a first sheet relative to a second sheet carried by the upper, movable presser bar. Releasable clamping means secure the second sheet to the movable presser bar, and the clamping means are preferably of an adjustable nature for securing different mixed ones of the second sheets to the movable presser bar. The movable presser bar also carries means for heat-pressure securing a third sheet, such as a label, to the second sheet which may, for example, be the waistband of a garment, prior to bonding the waistband to the sheet supported by the stationary presser bar, the latter sheet being, for example, the "-developed" length of a pair of trousers, shorts or similar garments.

Piston-cylinder mechanisms are provided for exerting the necessary pressure during a bonding operation, and means are provided for preventing the operative positioning of the piston-cylinder mechanisms relative to the movable presser bar and the actuation thereof when an operator's hand or other obstructions are positioned between the presser bars.

In a preferred form of the invention each of the various means and mechanisms heretofore described is controlled by and under the influence of a fluid circuit system.

3,635,781

ADHESIVE PAPER

Niles F. Guichet, 320 Olympic Place, Anaheim, Calif.

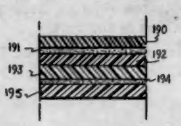
Continuation-in-part of application Ser. No. 681,785, Nov. 9, 1967, now Patent No. 3,490,146, Continuation-in-part of application Ser. No. 348,013, Feb. 28, 1964, now Patent No. 3,431,649. This application Sept. 2, 1969, Ser. No. 854,627

Int. Cl. B44f *1/00;* **B41m** *5/00*

U.S. Cl. 161—6 **10 Claims**

The invention comprises pressure-sensitive recording papers comprising in successive layers, a backing paper carrier, a releasable adhesive, a pressure-sensitive coating and a

clear protective overlay on a second carrier with a releasable adhesive. This recording paper is suitable for use in any



recording device and is particularly suitable for use with the dental pantograph described herein.

3,635,782

METHOD OF PREVENTING CONVERSION OF PHOTOGRAPHIC FILM USED FOR MAKING IMAGES OF A SINGLE OBJECT

Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.

Filed Nov. 10, 1969, Ser. No. 875,492
Int. Cl. G03c *1/76, 3/00*
U.S. Cl. 96—67 **5 Claims**

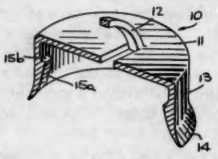
A method of preventing the home use of photographic film by employees which entails recording elongated marks thereon which are positioned between separate subareas of a film format, the subareas bearing multiple images of a single object to be photographed, such marks also aiding in the cutting steps which separate the multiple images from each other after the film is developed.

3,635,783

CHRISTMAS ORNAMENT STRUCTURE

William F. Rimmler, York, Pa., assignor to Eckman Corporation, Oak Brook, Ill.

Filed Dec. 18, 1969, Ser. No. 886,055
Int. Cl. A47q *33/08*
U.S. Cl. 161—7 **2 Claims**



A cap for securing the neck of a Christmas ornament is disclosed as including a hollow cylindrical member being enclosed on one end. Gripping means including a plurality of gripping elements extend from the inside of the cylindrical member towards the interior of the cylindrical member to grip the neck of the ornament that may be press fit inside the cylindrical member.

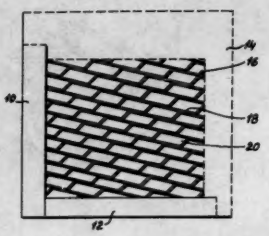
3,635,784

SOLID COMPOSITE BOARDS HAVING A COMPACT CORE OF ADHESIVE BINDER AND 85–98 PERCENT BY VOLUME OF POROUS, NONABSORBING GRANULATES SELECTED FROM THE GROUP CONSISTING OF CORK BARK, AND VERMICULITE

Jens C. Snitker, 4, Finlandsgade, Haslev, Denmark

Filed Mar. 16, 1967, Ser. No. 623,613
Claims priority, application Denmark, Mar. 17, 1966, 1384/66; Nov. 4, 1966, 5751/66; Dec. 14, 1966, 6480/66
Int. Cl. B32b *3/12, 21/02*
U.S. Cl. 161—43 **10 Claims**

A solid board, such as a door plate, comprising a solid core having a first and second core face and a frame surrounding said core adhesively connected thereto and having a first and second frame face flush with said first and second core face respectively. The first and second surface sheets are uniformly adhesively secured to the first core and frame face and to the second core and frame face respectively; the core consists of a compact core mass-produced from porous



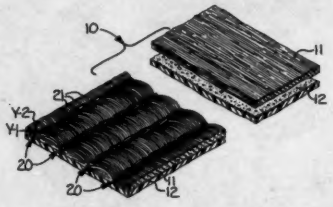
nonabsorbing granulates, which have been brought mutually to adhere to each other by adhesive means. There are reinforcement means embedded in the core mass which consist of a number of strips made of fibrous material each having a width equal to the frame thickness and extending between the two surface sheets.

3,635,785

STITCHED NONWOVEN FABRIC UTILIZING A FOAM LAYER AND A FIBROUS LAYER

George H. Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.

Filed Jan. 19, 1970, Ser. No. 3,755
Int. Cl. B32b *7/08*
U.S. Cl. 161—50 **9 Claims**



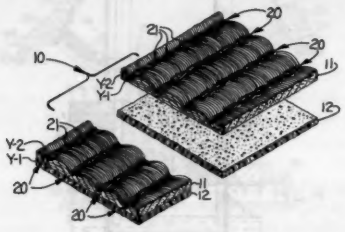
A stitched, multilayer, nonwoven fabric adaptable for use as bed coverings, garments and the like and characterized by providing different outer surface characteristics. The fabric comprises a first layer of nonwoven textile fibers oriented in the widthwise direction of the fabric and forming one outer face of the fabric for providing textile fiber characteristics, a second layer of a compressible, resilient foam material superimposed on and contiguous with the first layer and forming the other outer face of the fabric for providing foam characteristics, and elongate, spaced-apart rows of stitches penetrating the superimposed layers for stitch-bonding together the fibers of the first layer and for stitch-bonding together the superimposed layers and extending in the lengthwise direction of the fabric. The stitched, nonwoven fabric may include outer treated surfaces for providing desired surface finishes thereon.

3,635,786

LAMINATED NONWOVEN FABRIC UTILIZING A FOAM LAYER AND A STITCHED FIBROUS LAYER

George H. Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.

Filed Jan. 19, 1970, Ser. No. 3,777
Int. Cl. B32b 3/06
U.S. Cl. 161—50 10 Claims



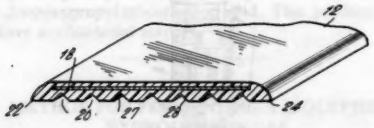
A laminated, multilayer, nonwoven fabric adaptable for use as bed coverings, garments and the like and characterized by providing different outer surface characteristics. The fabric comprises a first layer of nonwoven textile fibers oriented in the widthwise direction of the fabric and forming one outer face of the fabric for providing textile fiber characteristics, elongate, spaced-apart rows of stitches penetrating the first layer for stitch-bonding together the individual fibers thereof and extending in the lengthwise direction of the fabric, and a second layer of a compressible, resilient foam material superimposed on, contiguous with and laminated to the first layer and forming the other outer face of the fabric for providing foam characteristics thereto. The laminated, multilayer, nonwoven fabric may include outer treated surfaces for providing desired surface finishes thereon.

3,635,787

MOLDING STRIP

Victor Shanok, and Jesse P. Shanok, both of Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.

Filed Nov. 7, 1967, Ser. No. 681,144
Int. Cl. B32b 3/00, 15/08
U.S. Cl. 161—121 8 Claims



A molding strip suitable as a decorative strip or member provided with a back piece characterized by having notches along at least a portion of the back. The molding strip is useful on outside and inside corners and on other arcuate surfaces.

3,635,788

DEINKING AND REMOVAL OF CERTAIN CONTAMINANTS FROM RECLAIMED PAPER STOCK-HEAVYING

Harry J. Braun, 923 Carolina Street, Neenah, Wis., and Stanley A. Dunn, 310 Plympton Street, Verona, Wis.

Filed Jan. 22, 1971, Ser. No. 108,834
Int. Cl. D21b 1/08, 1/32; D21c 5/02
U.S. Cl. 162—4 15 Claims

In centrifugal cleaning and deinking of reclaimed defibered paper stock, a material is introduced into a slurry of the stock, which contains certain contaminants of about the same specific gravity as the fibers, so as to treat those contaminants selectively and cause them to assume the characteristics of heavier solids so that they are retained in the outer part of the vortex of the cleaner while the fibers migrate to the inner part of the vortex.

3,635,789

DEINKING OF WASTE XEROGRAPHIC COPY PAPER

Charles J. Green, Jr., Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 2, 1969, Ser. No. 821,375
Int. Cl. D21c 5/02
U.S. Cl. 162—5 9 Claims

REPULPING
TRANSFER OF PULP TO AGITATION TANK + DILUTION
MILD AGITATION AT TEMPERATURE OF 180° TO 200° F.
CONTINUAL SKIMMING OF DEVELOPER
ADDITION OF IMMISCIBLE ORGANIC SOLVENT
SKIMMING OF THE IMMISCIBLE ORGANIC FILM LAYER
RECOVERY OF PULP

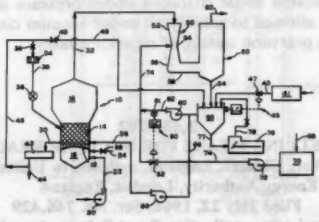
A flotation process for the removal of toner from waste xerographic copy paper which comprises adding a thin film of an immiscible organic solvent to an aqueous bath of repulped waste xerographic paper, mildly agitating the stock suspension, and skimming off the accumulated toner contained in the immiscible organic layer.

3,635,790

PROCESS FOR THE THERMAL OXIDATION OF SPENT LIQUOR

Thomas K. Heath, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed July 2, 1969, Ser. No. 838,522
Int. Cl. D21c 11/12
U.S. Cl. 162—30 16 Claims



A partially concentrated spent liquor is introduced into a venturi-type scrubber-evaporator along with combustion gases containing entrained solids from a fluidized bed reactor. From the scrubber-evaporator, the combustion gases are removed with a cyclone separator and the remaining concentrated spent liquor and entrained solids are passed through a comminuting device. Preferably the comminution device is a

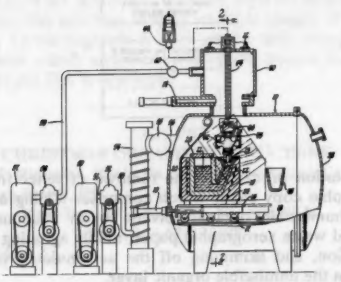
comminution pump. The comminution device grinds the entrained solids into very fine particles by continuous recycling. The resulting concentrated spend liquor containing finely ground solids can be partially recycled to the venturi-type scrubber-evaporator by mixing a portion of the fine solid containing liquor with the original spent liquor feed to the venturi. The amount of solids fed to the venturi-type scrubber-evaporator can be controlled by varying the amount of find solid containing liquor feed. The remainder of the fine solid containing concentrated spent liquor is fed to the fluidized bed oxidation reactor whereby an ash bed product can be treated for chemical recovery without the problem of scrubber-evaportor shutdowns due to large solid particles.

3,635,791

PRESSURE POURING IN A VACUUM ENVIRONMENT

Kenneth B. Bly, Bloomfield Hills, and Donald S. Mills, Southfield, both of Mich., assignors to General Motors Corporation

Filed Aug. 4, 1969, Ser. No. 847,118
Int. Cl. B22d *27/16*
U.S. Cl. 164—258 **2 Claims**



An apparatus for melting and casting high-temperature, heat-resistant alloys in a vacuum environment. The apparatus includes an induction-heated furnace having an upwardly extending pouring spout mounted in a vacuum chamber, a boron nitride pouring nozzle, a bottom fill permeable refractory mold, and means whereby the molten metal is forced under pressure into the mold and allowed to solidify. In the casting process, the metal is melted under a vacuum, an evacuated bottom fill mold is seated on the pouring nozzle, and the molten metal is forced under pressure up into the mold and allowed to solidify all under vacuum conditions to produce a precision casting of superior quality.

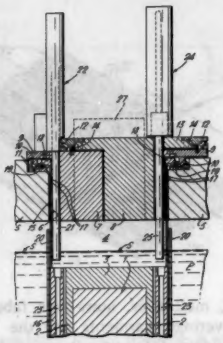
3,635,792

REFUELLING MEANS FOR NUCLEAR REACTORS

Allan Barker, Chester, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed July 22, 1968, Ser. No. 746,429
Claims priority, application Great Britain, Aug. 16, 1967, 37,819/67
Int. Cl. G21c *19/18*
U.S. Cl. 176—32 **6 Claims**

A fast reactor of the type which has its core submerged in a pool of liquid coolant contained in a vessel, is provided with an annular store for fuel elements, the store also being submerged in said pool of liquid coolant and being disposed concentrically relative to said reactor core. Fuel-handling means are provided for moving fuel elements to said store and from thence to said core, and vice versa. The annular store is preferably rotatable relative to a fixed part of the reactor installation and enables unloading and loading of said



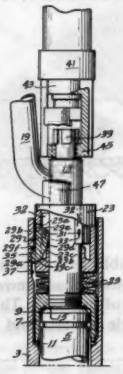
store to be undertaken while the reactor is operating. The fast reactor is conveniently liquid-metal-cooled.

3,635,793

CONNECTOR ASSEMBLY

Jack W. Kolb, and Bob G. Smith, both of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 7, 1969, Ser. No. 864,430
Int. Cl. G21c *21/00*
U.S. Cl. 176—87 **8 Claims**



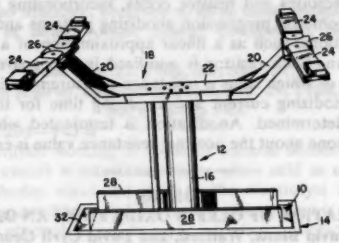
A working member, particularly nuclear fuel, is held in place by a latched assembly. The latches are operated by a slidable sleeve working against a heavy spring. A pneumatic cylinder and piston pushes the slide against the spring, releasing the latches. The arrangement also compensates for creep or thermal expansion and, in one embodiment, relieves pressure surges.

3,635,794

SAFETY DOOR FOR VEHICLE LIFT

John G. Petry, San Jose, Calif., assignor to J. D. Cochin Manufacturing Company, San Francisco, Calif.

Filed Jan. 5, 1970, Ser. No. 579
Int. Cl. B66f 7/28
U.S. Cl. 187—8.62 8 Claims



A door mechanism for the ends of the rectangular opening of the floor box for housing a vehicle lift of the type which is disposed below floor level in the lift box when the lift is at its lowest position. The mechanism includes a pair of swingable safety doors for the ends of the opening of the floor box. The safety doors are actuated by the swingable movement of the pair of main doors which cover the central portion of the opening of the floor box when the lift is at its lowest position. An actuating arm is provided for each safety door, respectively, for moving it into a horizontal position in response to swinging movement of a corresponding main door. The arm also supports the safety door in its horizontal position.

3,635,795

ENZYMATIC RESOLUTION OF RACEMIC (CIS-1,2-EPOXYPROPYL) PHOSPHONIC ACID COMPOUNDS

Arnold L. Demain, Westfield; John M. Chemerda, Watchung, Plainfield, and Raymond F. White, Englishtown, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 27, 1968, Ser. No. 787,580
Int. Cl. C12d 9/00
U.S. Cl. 195—2 12 Claims

Enantiomeric mixtures of esters and amides of (cis-1,2-epoxypropyl)phosphonic acid (−) stereoselectively hydrolyzed by enzymes of micro-organisms to produce (−) (cis-1,2-epoxypropyl)phosphonic acid. This product and its salts have antibacterial activity.

3,635,796

METHOD FOR FERMENTING A LIQUEFIED HYDROCARBON GAS

Osamu Imada, Machida-shi; Kazuo Hoshiai, Tokyo, both of Japan, and Masatami Tanaka, deceased, late of Machida-shi, Japan (by Itsuko Tanaka, administratrix) assignors to Kyowa Hokko Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 702,765, Feb. 23, 1968, now abandoned. This application May 26, 1968, Ser. No. 740,402
Int. Cl. C12b 1/00
U.S. Cl. 195—28 R 7 Claims

A continuous process for culturing a micro-organism in an aqueous nutrient medium under aerobic conditions in the presence of a liquefied hydrocarbon gas as a main carbon source which comprises adding fresh liquefied hydrocarbon gas to the culture medium, determining the concentration of dissolved liquefied hydrocarbon gas in the culture medium and controlling the addition of fresh liquefied hydrocarbon gas depending upon the detected concentration of said liquefied hydrocarbon gas in the culture medium, the supply and dissolution of the liquefied hydrocarbon gas being based on the rate of said gas consumed by the micro-organisms. Alternatively, the partial pressure of the liquefied hydrocarbon gas in the vent gas can be measured and used to control the rate of liquefied hydrocarbon gas supplied to the culture medium.

3,635,797

ENZYMATIC COMPOSITION

John J. Battistoni, and William E. Hibbard, both of Las Vegas, Nev., assignors to Nevada Enzymes, Inc.

Filed Nov. 18, 1968, Ser. No. 776,772
Int. Cl. C02c 1/02
U.S. Cl. 195—56 7 Claims

Multienzymatic composition comprises an enzymatic fermentation reaction product, surfactants, citric and lactic acids, urea and pine oil.

3,635,798

BLOOD AND FLUID CULTURING SYSTEM

William R. Kirkham, 77 Livingston Ave., Edison, N.J., and William R. Kozub, 212 High Street, Metuchen, N.J.

Continuation-in-part of application Ser. No. 717,708, Apr. 1, 1968, now abandoned. This application Mar. 24, 1969, Ser. No. 809,881
Int. Cl. C12k 1/04
U.S. Cl. 195—103.5 6 Claims

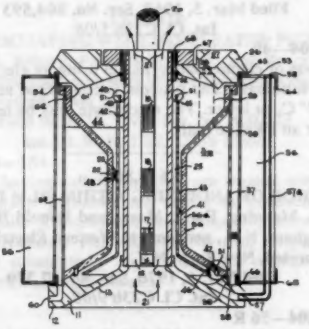
Method of culturing blood by agglomerating red blood cells in a container containing a solution of "agglomerating" agents and a nutrient medium for any bacteria which may be present in the blood, filtering the solution and unagglomerated blood elements whereby bacteria are trapped upon the filter, adding a culture medium to the filter and incubating the bacteria for growth and identification. The filtering unit may be composed of two separate filters so that aerobic and anaerobic bacterial growth may be carried out. The apparatus for the method is also disclosed.

3,635,799

PORTABLE STILL WITH CONCENTRIC-VAPORIZING, RESERVOIR AND COLLECTION CHAMBERS

Alvin Lowi, Jr., 2146 Toscanni Drive, San Pedro, Calif.

Filed Jan. 31, 1969, Ser. No. 795,468
Int. Cl. B01d 3/00
U.S. Cl. 202—83 9 Claims



A distillation unit including a vaporizing chamber, a reservoir containing liquid to be distilled and operatively associated with the vaporizing chamber to feed liquid thereto, means for heating the vaporizing chamber liquid to produce a vapor phase thereof, and means for condensing the vapor phase to form a distilled liquid separated from the reservoir

liquid. A flue is provided in heat-exchange relation with the vaporizing chamber and means are provided for directing heat to the flue. Means are also provided for rupturing bubbles of vapor produced in the vaporizing chamber.

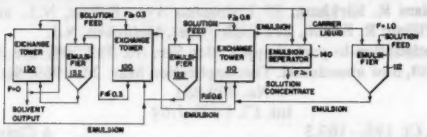
3,635,800
TRANSFER OF LIQUID AS VAPOR BETWEEN BODIES OF LIQUID WITH DIFFERENT CURVATURES AND ASSOCIATED VAPOR PRESSURES

Franklin A. Rodger, and Edward M. Purcell, both of Cambridge, Mass., assignors to Pactide Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 631,523, Apr. 17, 1967, now abandoned , Continuation-in-part of application Ser. No. 256,407, Feb. 5, 1963, now abandoned. This application Mar. 23, 1970, Ser. No. 21,877

Int. Cl. B01d *3/00, 3/14, 3/34, 3/08, ;* **B01f**

U.S. Cl. 203—10 **16 Claims**



A liquid transfer system is disclosed, particularly applicable to the desalination of water, in which a solution, e.g., saline water, is formed into fine droplets having a specified curvature and associated vapor pressure dispersed in a carrier fluid immiscible with the solvent to form a disperse system which is then brought into intimate association with a body of solvent of lower solute concentration and having a smaller curvature and lower associated vapor pressure creating an unstable condition in which solvent transfers as vapor from the droplets of the disperse system to the body of solvent. Examples are given in which the disperse system is an aerosol, i.e., carrier fluid is a gas, or an emulsion, i.e., carrier fluid is a liquid.

3,635,801
NICKEL ELECTRODEPOSITION PROCESS FOR IMPROVING HIGH-TEMPERATURE DUCTILITY

Charles A. Bruch, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 5, 1969, Ser. No. 804,593

Int. Cl. C23b *5/08*

U.S. Cl. 204—49 **1 Claim**

A process of electroplating nickel using an electrolyte containing a sulfamate. The process is conducted at a temperature of 27° C. or lower. The electrolyte may be used in either an acid or an alkaline bath.

3,635,802
METHOD OF ANODIZING A THIN-FILM DEVICE

Robert A. Manning, Essex, Mass., and Donald H. Raymond, Rockingham, N.H., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,370

Int. Cl. C23b *9/00*

U.S. Cl. 204—56 R **15 Claims**

Thin-film resistors and other devices are precision adjusted by a regular, geometric progression of steps. Each step of a binary step anodization pattern for adjusting a resistor to a nominal resistance value is designed to decrease by one-half the percentage deviation in resistance from the nominal value at the end of the preceding step. Successive binary step decreases in the percentage resistance deviation are attained by a series of binary step decreases in the product of anodizing current and anodizing time for each step. The resultant, decreasing rate adjustment pattern tends to render negligible any chance of substantially overshooting the desired nominal value while permitting rapid attainment of the nominal value.

A general purpose, process control computer is equipped with a series of tapes or other program devices storing anodizing current and anodizing time information for carrying out successive steps of the subject anodizing technique. Such information is that which has been derived for given sets of conditions and resistor codes, incorporating various regular, geometric progression anodizing patterns and linear approximations, such as a linear approximation of a binary step pattern. Each resistor is anodized in successive steps, after each of which steps a resistance measurement is made and the anodizing current and anodizing time for the next step are determined. Anodization is terminated when the tolerance zone about the nominal resistance value is entered.

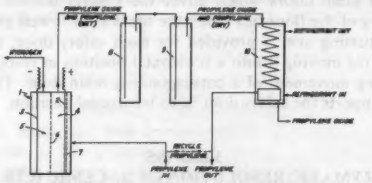
3,635,803
PREPARATION OF OLEFIN OXIDE FROM AN OLEFIN

Thomas David Binns, Watford, and David Cyril George Gattiker, London, both of England, assignors to Interoxo A.G., Glarus, Switzerland

Continuation-in-part of application Ser. No. 879,159, Nov. 24, 1969, now abandoned. This application Sept. 30, 1970, Ser. No. 76,781

Int. Cl. C07b *29/06;* **C07d** *1/08, 1/14*

U.S. Cl. 204—80 **32 Claims**



An olefin oxide is produced by electrolysis of an aqueous medium containing acetate ions while an olefin is added to the medium.

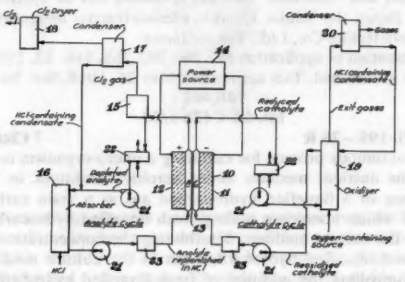
3,635,804
PREPARATION OF CHLORINE BY ELECTROLYSIS OF HYDROCHLORIC ACID AND POLYVALENT METAL CHLORIDES

Gerhard Gritzner, and James J. Leddy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 24, 1969, Ser. No. 844,402

Int. Cl. C01b *7/06, 11/26*

U.S. Cl. 204—128 **5 Claims**



The present invention relates to a dual electrolyte system utilizing a diaphragm electrolytic cell. The anolyte and

catholyte, containing aqueous HCl and a polyvalent reducible metal chloride, are processed and recycled separately. The system of the present invention produces high-purity Cl_2 at higher than conventional current efficiencies.

3,635,805

WORKING OF METAL BODIES

Samuel Raviv, Beer-Sheva; Elsa Rabinovitz, Dimona, and Shimon Malkiely, Beer-Sheva, all of Israel, assignors to The State of Israel, Atomic Energy Commission, Beer-Sheva, Israel

Filed Aug. 12, 1968, Ser. No. 751,925
Claims priority, application Israel, Feb. 29, 1968, 29,547
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 R 9 Claims

Electrolytic working of metal or mineral bodies. An electrolytic circuit is established using nitric acid as electrolyte and cathodes which are inert to the electrolyte under the operating conditions and the body to be worked is immersed into the electrolyte and brought into direct contact with, or close proximity to, the cathode. A current is flown through the circuit and by this the body is bored, cut or the like according to the specific arrangement.

3,635,806

PHOTOCHEMICAL BLEACHING OF POLYMALEATE HOMOPOLYMERS AND COPOLYMERS IN THE PRESENCE OF A PERACID

David C. Heckert, Oxford, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 27, 1969, Ser. No. 869,910
Int. Cl. D06i *3/02*; B01j *1/00*
U.S. Cl. 204—159.14 15 Claims

The photochemical bleaching of polymaleate homopolymers and copolymers by the process which comprises irradiating a polymaleate material with ultraviolet light in the presence of an inorganic peracid and a solvent having low absorptivity for irradiation.

3,635,807

PHOTOLYTIC PRODUCTION OF KETOXIMES

John P. Guarino, Trenton, and Robert H. Williams, Pennington, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 718,365, Apr. 3, 1968, now Patent No. 3,459,648, which is a continuation-in-part of application Ser. No. 569,107, Aug. 1, 1966, now abandoned. This application Jan. 13, 1969, Ser. No. 790,837
Int. Cl. B01j *1/10*; C07c *81/06*
U.S. Cl. 204—162 16 Claims

Cycloaliphatic ketoximes are produced in good yields by means of a photochemical reaction between a cycloaliphatic compound and an alkyl nitrite in the presence of an alkyl alcohol and ammonia.

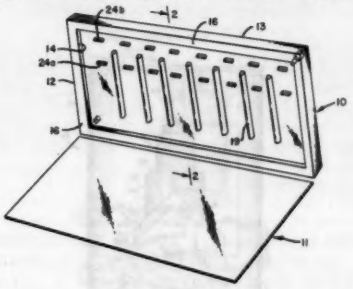
3,635,808

METHOD AND APPARATUS FOR FORMING ELECTROPHORESIS APPARATUS AND THE LIKE

Franklin R. Elevitch, 430 Navada Street, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 300,341, Aug. 6, 1966, now abandoned, continuation-in-part of application Ser. No. 579,089, Sept. 13, 1966, now abandoned, continuation-in-part of application Ser. No. 664,133, Aug. 29, 1967, now Patent No. 3,479,265, dated Nov. 18, 1969. This application Nov. 17, 1969, Ser. No. 877,378
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G 10 Claims

Thin film apparatus for electrophoresis, chemical analyses and the like is provided, the film being an aqueous gel such as agarose gel. Improvements in the manufacture of such apparatus are provided such as the use of paraffin wax on the cover part of the apparatus to facilitate separation of the film



of gel from the cover. Also continuous and semicontinuous methods of production are provided.

3,635,809

ELECTRODEPOSITION COATING PROCESS OF VINYLIDENE FLUORIDE RESIN

Shigeru Seki, and Kouji Sato, both of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1969, Ser. No. 819,979
Claims priority, application Japan, Apr. 26, 1968, 43/28201
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 13 Claims

An electrodeposition process which comprises electrophoretically depositing a vinylidene fluoride resin on an electrical conductor from a solvent mixture consisting essentially of a vinylidene fluoride resin powder dispersion in an organic liquid dispersing medium, said organic liquid dispersing medium comprising an organic liquid having a dielectric constant greater than 3.8 and being selected from the group consisting of organic liquids having a solubility parameter of from about 7.0 to about 13.0, exhibiting a low degree of hydrogen bonding, a solubility parameter of from about 7.7 to about 12.5 exhibiting a middle degree of hydrogen bonding, a solubility parameter of from about 9.6 to about 11.8 exhibiting a high degree of hydrogen bonding, and mixtures thereof.

3,635,810

ELECTROCOATING WITH DESULFATED PIGMENTS

Garmond G. Schurr, Palos Heights, Ill., and Bruce M. Morgan, Griffith, Ind., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Sept. 22, 1969, Ser. No. 860,023
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 3 Claims

Pigments having sulfate impurity are treated with barium hydroxide. Such pigments are useful in producing glossy anodic deposits of pigmented polycarboxylic resins by electrocoating processes. The bath stability over long periods of time can be substantially improved and is valuable in continuous electrocoating processes.

3,635,811

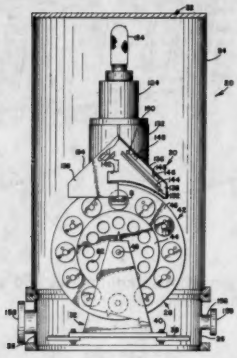
METHOD OF APPLYING A COATING

George C. Lane, Milford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 6, 1967, Ser. No. 680,794
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 8 Claims

An apparatus for applying a coating material to a substrate such as a razor blade, comprising a drum unit having a plu-

rality of driven hub assemblies, each of which supports carrier means for carrying a large number of razor blades, and in which the hubs are driven, for example, by an epicyclic gear or chain mechanism, so as to expose the desired portions of



the carriers, in a desired timed relation, to a coating material which is caused to emanate from a fixed source. The source comprises a so-called sputtering module including housing having, at the top part thereof, a pair of angled target plates from which the coating material is taken, and, at the bottom thereof, an opening past which the carriers are moved by the drum.

By "sputtering" as used herein, is meant the slow disintegration of a target under the bombardment of ionized gas molecules, and, more particularly, the disintegration of a coating material which is placed on the target and transferred to a substrate after being "sputtered" from the target.

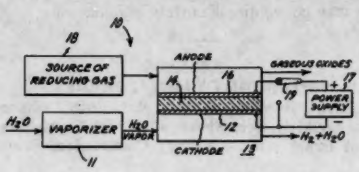
The coating material is moved from the target plates to the substrate by a so-called "RF induced plasma sputtering," process. In this process, with the apparatus and materials in a very high vacuum, a high radio frequency, ("R.F.") is impressed across two electrode plates, each of which is disposed immediately behind the target plates, and each of which attains a high negative space charge. Thereafter, a normally inert gas, such as argon is introduced to the area between the plates, ionized, by bombardment with high velocity electrons, and the resulting plasma particles strike the target plates containing the coating material, freeing or "-sputtering" it therefrom, in atomic or molecular sized particles, which are then attracted to the grounded potential substrate and are received and firmly bound thereon to form a coating of extreme smoothness and adhesion. In one embodiment, a metal coating is sputtered onto the edge portions of razor blades, and in other embodiments, organic polymers or other high-molecular weight coatings are transferred to a substrate, in some cases with simultaneous partial chemical breakdown, rearrangement, or other chemical or physical reaction during the sputtering process, and in still further embodiments, metal oxides, alloys, or other metal compounds are transferred, or simultaneously formed and transferred.

3,635,812
SOLID OXYGEN-ION ELECTROLYTE CELL FOR THE DISSOCIATION OF STEAM

Henry S. Spacil, Schenectady, N.Y., assignor to General Electric Company

Filed July 5, 1968, Ser. No. 742,653
Int. Cl. B01k *1/00, 3/04, 3/06*
U.S. Cl. 204—193 **4 Claims**

The dissociation of water vapor primarily for the generation of hydrogen gas by the use of a solid oxygen-ion electrolyte cell is described. In the preferred arrangement means



for supplying a flow of reducing gas to the anode is employed to depolarize the anode.

3,635,813
ANODE SYSTEM FOR CATHODIC PROTECTION OF STRETCHED CHAIN

Richard W. Drisko, Oxnard, and Earl J. Kiefer, La Mesa, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 3, 1969, Ser. No. 803,764
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **1 Claim**

The invention comprises cathodic protection against corrosion of stretched chain immersed in an electrolyte (sea water) in which sacrificial anodes of pure zinc are cast onto independent and spaced links of the chain. In order to ensure electrical continuity between adjacent links, a cable may be stretched therealong connecting each link to the spaced anodes. Thus when the chains are positioned in water having a high conductivity, e.g., sea water, the sacrificial anodes are consumed and an electrical current passes along the chain links so as to produce electrical potential and cathodically protect the chain from corrosion.

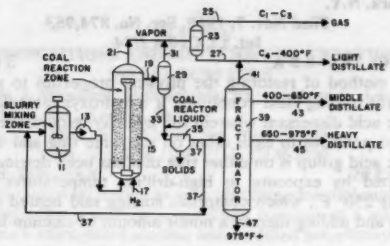
3,635,814
CATALYTIC COAL CONVERSION PROCESS

Robert W. Rieve, Springfield, and Harold Shalit, Drexel Hill, both of Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,613
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 **16 Claims**

The hydroconversion of coal solids is accomplished at conversion conditions by bringing coal solids, molecular hydrogen and catalyst solids into contact in a reactor. The catalyst solids are comprised of catalytically active substance containing molybdenum on an alumina support material. The catalyst solids are in the size range between 3 and 200 mesh

U.S. Sieve Series and have a pore volume of at least 0.015 milliliter (STP) per gram and an accessible pore distribution



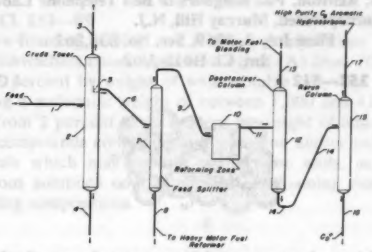
such that at least 50 percent of the pores are greater than 1,100 angstroms.

3,635,815

PROCESS FOR PRODUCING A MIXTURE OF HIGH-PURITY C AROMATIC HYDROCARBONS

Paul J. Kuchar, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 2, 1969, Ser. No. 838,619
Int. Cl. C10g *35/00*
U.S. Cl. 208—95 **2 Claims**



High purity C_8 aromatic hydrocarbons are produced by prefractionating a C_6-400° F. naphtha feed fraction into a 270° F. to 275° F. endpoint fraction and catalytically reforming this 270° F. to 275° F. endpoint fraction to produce a reformate having a minimum of C_8+ hydrocarbons. The reformate is then passed to a deoctanizing zone and a rerun column zone to recover a mixture of high-purity C_8 aromatic hydrocarbons.

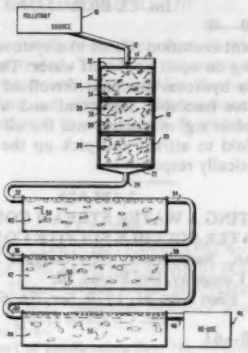
3,635,816

METHOD OF PURIFYING CITRUS PLANT EFFLUENT AND RAISING WORMS AND FISH

Gerald Golub, 1879 Via Genoa, Winter Park, Fla.

Filed Aug. 12, 1969, Ser. No. 849,473
Int. Cl. C02c *1/02*
U.S. Cl. 210—2 **1 Claim**

Removable filter units consisting of environmental support material holding captured worms, or great numbers of monosex fish, either separately or in combination are in operative contact with a constantly changing body of liquid



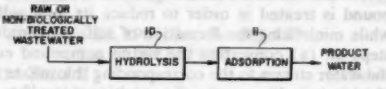
for removing organic pollutants while allowing periodic harvesting of mature worms and fish.

3,635,817

WASTE WATER TREATMENT PROCESS

Mathew M. Zuckerman, Yonkers, and Alan H. Molof, New City, both of N.Y., assignors to Envirotech Corporation, Palo Alto, Calif.

Filed Oct. 17, 1968, Ser. No. 768,378
Int. Cl. C02c *5/02*
U.S. Cl. 210—26 **15 Claims**



Waste water from industrial and municipal sources is treated in a hydrolysis treatment sequence wherein large soluble organic molecules such as proteins and polysaccharides in the waste water are broken down into small molecules such as amino acids and mono and disaccharides which are more readily adsorbed by activated carbon or other adsorbents. Additional treatment processes may be employed at various stages of the hydrolysis treatment sequence.

3,635,818

CHITIN AND CHITOSAN AS CHROMATOGRAPHIC SUPPORTS AND ADSORBENTS FOR COLLECTION OF METAL IONS FROM ORGANIC AND AQUEOUS SOLUTIONS AND SEA WATER

Maria Gertrude Muzzarelli, Nee Weckx, Casella Postale 693, Bologna 40100, Italy

Filed Oct. 13, 1969, Ser. No. 865,999
Claims priority, application Italy, Dec. 6, 1968, 1836/68
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **10 Claims**

The present invention relates to the use of chitin as a chromatographic chelating support and adsorbent for the collection and for the separation of the metal ions from aqueous and organic solutions and from sea water.

3,635,819

PROCESS FOR CLEANING UP OIL SPILLS

Robert Kaiser, Cambridge, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed June 15, 1970, Ser. No. 46,558
Int. Cl. E02b *15/04*
U.S. Cl. 210—40 10 Claims

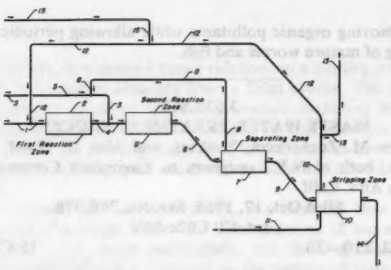
The present invention relates to a system for controlling oil spills floating on open bodies of water. The process involves dispersing a hydrocarbon base ferrofluid containing an oil soluble water insoluble surfactant and a stable colloid of magnetic solids e.g. magnetite into the oil slick, then using a magnetic field to attract and pick up the oil spill, which is now magnetically responsive.

3,635,820

TREATING A WATER STREAM CONTAINING A WATER-SOLUBLE SULFITE COMPOUND

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.

Filed Aug. 31, 1970, Ser. No. 68,274
Int. Cl. C02b *1/18*
U.S. Cl. 210—61 21 Claims



A water stream containing a water-soluble sulfite compound is treated in order to reduce its total sulfur content while minimizing the formation of sulfate byproducts by the steps of: (a) converting the sulfite compound contained in the water stream to the corresponding thiosulfate compound; (b) catalytically reacting the resulting thiosulfate compound with hydrogen at reduction conditions selected to produce the corresponding sulfide compound; and thereafter (c) stripping hydrogen sulfide from an effluent stream from step (b) to form a substantially sulfate-free treated water stream which is substantially reduced in total sulfur content relative to the input water stream. Principal utility of this treatment procedure is associated with the regeneration of a sulfite-containing absorbent stream which is commonly produced by contacting a flue gas stream containing sulfur dioxide with a suitable aqueous absorbent stream containing an alkaline reagent.

3,635,821

FLAME RETARDANT COMPOSITIONS COMPRISING AN INERT FILLER, A HALOGEN SOURCE AND A PHOSPHORUS-CONTAINING COMPOUND AND METHODS FOR THEIR PREPARATION

Kenneth Treadwell, Rahway, N.J., assignor to M & T Chemicals Inc., New York, N.Y.

Filed July 23, 1969, Ser. No. 844,179
Int. Cl. C09k *3/28*; B44d *1/16*
U.S. Cl. 252—8.1 17 Claims

A flame-retardant system is provided for polyurethane foams comprising an inert filler, a halogen source and a phosphorus-containing compound, and, also, urethane foam compositions containing the flame-retardant systems. In addition, methods are provided for making the systems including coating the individual particles of the filler with a composition containing the halogen source, and thereafter adhering the phosphorus-containing compound to the coated particles, and also, methods for making the flame-retardant urethane foam compositions.

3,635,822

DRILLING FLUID

Jack H. Douglass, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,953
Int. Cl. C10m *3/34*
U.S. Cl. 252—8.5 A 3 Claims

A method of restoring the physical properties to a shale control drilling fluid containing a dihydroxynaphthalenesulfonic acid dispersant wherein the hydroxyl groups are in adjacent positions to each other on the same ring and the sulfonic acid group is on either ring that has been detrimentally effected by exposure to high-drilling temperatures above about 250° F., which comprises stirring said heated drilling fluid and adding thereto a minor amount of calcium hydroxide.

3,635,823

SYNERGISTIC COMPOSITION AND USE THEREOF

Edwin J. Latos, Chicago, and Robert H. Rosenwald, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 591,990, Nov. 4, 1966, now abandoned. This application Jan. 30, 1970, Ser. No. 7,208
Int. Cl. C10m *1/46*
U.S. Cl. 252—32.5 11 Claims

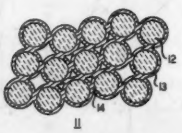
Synergistic mixture of (1) the reaction product of from one to two mole proportions of amino compound and one mole proportion of polyhalopolyhydropolycyclicdicarboxylic acid or anhydride and (2) salt of oxyalkylenated alcohol phosphate and amino compound.

3,635,824

RESISTANCE HEATER AND METHOD FOR PREPARATION THEREOF

Raymond G. Brandes, Meyersville, N.J., and Charles M. Pleass, Reiffton, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 3, 1969, Ser. No. 838,862
Int. Cl. H01b *1/02*
U.S. Cl. 252—512 4 Claims



A resistance heater comprising a sintered mass of refractory particles, each particle comprising an insulating core coated with a thin film of an electrically conducting material, is obtained by a processing sequence involving coating the particles of interest, compacting the coated particles to form a pellet and sintering the pellet. Devices produced in accordance with the described technique manifest enhanced reliability and uniformity as compared with prior art heaters, and permit a new degree of freedom in the design of heating elements.

3,635,825

WATER-INSENSITIVE HYDRAULIC FLUIDS CONTAINING BIS-BORATE ESTERS OR BRIDGED-BORATE ESTERS

Arthur W. Sawyer, Hamden, and David A. Csejka, Orange, both of Conn., assignors to Olin Corporation

Continuation-in-part of application Ser. No. 717,997, Apr. 1, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 653,335, July 14, 1967, now abandoned. This application Oct. 12, 1970, Ser. No. 80,121
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 14 Claims

This invention relates to water-insensitive hydraulic fluid compositions which contain at least one bis-borate or

bridged-borate ester as the base component in said fluid composition. Such water-insensitive hydraulic fluids are high-boiling compositions particularly useful as brake fluids.

3,635,826

COMPOSITIONS AND METHODS FOR TREATING METAL SURFACES

Andrew J. Hamilton, Philadelphia, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Nov. 3, 1969, Ser. No. 873,626
Int. Cl. C23g *1/08, 1/12*; C23f *3/00*
U.S. Cl. 252—79.4 **20 Claims**

Acidic solutions having as an acidic component phosphoric acid and sulfuric acid, as a surfactant component a mixture of primary ethoxylated alcohol and modified polyethoxylated straight chain alcohol, and as a sequestrant component a mixture of oxalic acid and citric acid, are useful in cleaning aluminum, especially drawn and ironed aluminum cans coated with drawing oil, in cleaning, deoxidizing and brightening stainless steel, and in forming corrosion resistant and paint adherent iron phosphate coatings on ferriferous surfaces when applied thereto by the reverse roll coat method.

3,635,827

LOW-FOAM RINSING AND WASHING AGENTS FOR DISH WASHERS

Gunter Jakobi, Hilden, Rhine, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Feb. 17, 1969, Ser. No. 799,933
Claims priority, application Germany, Mar. 14, 1968, H 65601
Int. Cl. C11d *1/68*
U.S. Cl. 252—89 **10 Claims**

Low-foaming rinsing and washing compositions adapted for dishwashers consisting essentially of (A) from 70 percent to 98 percent by weight of water-soluble polyvinyl alcohols having a molecular weight of between 1,000 and 4,000, and (B) from 2 percent to 30 percent by weight of interface active compounds containing oxypropylene and/or oxbutylene radicals which may contain oxyethylene units, as well as aqueous solutions containing said low-foaming rinsing and washing compositions.

3,635,828

ENZYME-CONTAINING DETERGENT COMPOSITIONS

Lawrence Benjamin, Springfield Township, Hamilton County, and John F. Sullivan, Colerain Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1969, Ser. No. 888,955
Int. Cl. C11d *7/38*
U.S. Cl. 252—99 **10 Claims**

Soil- and stain-removing detergent compositions consisting essentially of a water-soluble synthetic organic detergent and from 0.01 to 2 percent of a lipoxidase having enzymatic activity over the ranges of 5° C. to 70° C. and pH 5 to 11 are disclosed. The lipoxidase-containing detergent compositions can optionally contain a fatty acid substrate having cis-, cis-double bonds or an alkyl ester thereof for coupled oxidation of stains. Inorganic peroxy compounds can also be employed. The compositions of the invention are particularly adapted to the treatment of textile materials having soils or stains which have a content of polyunsaturated components.

3,635,829

DETERGENT FORMULATIONS

Meiling T. Yang, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed May 19, 1969, Ser. No. 825,985
Int. Cl. C11d *3/34, 3/30*
U.S. Cl. 252—526 **10 Claims**

To obviate eutrophication of water, nonphosphorus detergent builders are provided. These are the water-soluble salts of 2-[N,N-di-(carboxymethyl)]amino-3-sulfopropionic acid (e.g., the tetrasodium salt thereof). Conventional detergent actives may be used with these builders. Synthesis of the builders is described.

3,635,830

DETERGENT COMPOSITIONS CONTAINING OXYDISUCCING ACID SALTS AS BUILDERS

Vincent Lamberti, Upper Saddle River, and Mark D. Konort, Haworth, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of application Ser. No. 731,700, May 24, 1968, now abandoned. This application Nov. 24, 1969, Ser. No. 879,627
Int. Cl. C11d *3/20, 7/26*; C02b *1/22*
U.S. Cl. 252—152 **7 Claims**

There are disclosed herein detergent compositions containing a water-soluble organic detergent compound and as a builder therefore the normal alkali metal, ammonium or alkanol amine salts of ether polycarboxylic acids selected from the group consisting of oxydisuccinic acid, carboxymethyloxysuccinic acid and hydrofuran tetracarboxylic acid.

3,635,831

PRODUCTION OF HIGH-PURITY CESIUM-137

Arthur F. Rupp; John J. Pinajian, and Stanley J. Rimshaw, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 25, 1969, Ser. No. 861,193
Int. Cl. G21c *19/00*
U.S. Cl. 252—301.1 R **6 Claims**

A method has been provided for the production of high-purity cesium-137 free of cesium-134. Concentrated ^{137}Cs free of ^{134}Cs is obtained by removing nonsoluble gases, including xenon isotopes, from an operating reactor and passing these gases through a stainless steel mesh at a point in time of the gas removal path to optimize the decay of ^{137}Xe to ^{137}Cs. Since cesium is highly reactive, it will react with the mesh and thereby be deposited thereon. The mesh is then periodically removed from the gas stream and washed with water to remove the solids enriched in ^{137}Cs.

3,635,832

DECORATIVE COMPOSITION

Jack Toney, Minneapolis, Minn., assignor to Craft Master Corporation

Filed May 26, 1969, Ser. No. 827,888
Int. Cl. C09k *1/00*
U.S. Cl. 252—301.3 R **4 Claims**

There are disclosed improved decorative compositions containing a flock agent, generally combined with an adhesive in which at least a portion of the flock agent is composed of particles containing an ultraviolet responsive, luminescent material. The particles preferably have an average size in the range of 25 microns to one-half inch. The compositions are useful in decorating surfaces such as Christmas trees, floats and glass windows, particularly where a flocked decorative design is desired.

3,635,833

MANGANESE ACTIVATED MAGNESIUM-LITHIUM ALUMINO-GALLATE LUMINESCENT MATERIAL

Ranajit Kumar Datta, East Cleveland, Ohio, assignor to General Electric Company

Filed Apr. 28, 1969, Ser. No. 819,919
Int. Cl. C09k *1/04, 1/68*
U.S. Cl. 252—301.4 R 3 Claims

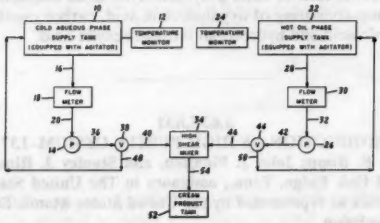
Manganese-activated lithium gallate, magnesium-lithium gallate, and magnesium-lithium alumino-gallate phosphors emit in the green region when excited by cathode rays and short-wavelength ultraviolet radiation.

3,635,834

PROCESS FOR PREPARING SEMISOLID EMULSIONS

Rudolfo Cilento, North Brunswick, and Robert M. Cohn, Colonia, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,810
Int. Cl. B01j *13/00*
U.S. Cl. 252—314 1 Claim



A process is provided for preparing semisolid emulsions (creams) wherein a hot oil phase and a cold aqueous phase are mixed under conditions of high shear to interdisperse and homogenize the phases and with a second thereafter cause them to congeal and form a cream. Emulsifiers are included in either or both of the phases or can be separately mixed with the two phases.

3,635,835

GELLED ACIDIC COMPOSITIONS

Marvin L. Peterson, Woodstown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Aug. 28, 1967, Ser. No. 663,495, now Patent No. 3,507,720. Divided and this application Aug. 20, 1969, Ser. No. 871,342
Int. Cl. B01j *13/00*
U.S. Cl. 252—315 18 Claims

Aqueous acidic compositions gelled with a polymer having pendent amide or nitrile functions cross-linked by a monomer containing a plurality of $-(CH_2OR)$ groups bonded to amido nitrogen and a process for their preparation. The gelling system of this invention finds particular utility in explosive compositions based on an oxidizing agent and one or more fuels or sensitizers.

3,635,836

THICKENED COMPOSITIONS AND THE PROCESS OF PREPARING SAME

Joseph D. Mullen, Golden Valley, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 10, 1969, Ser. No. 875,511
Int. Cl. B01j *13/00*; C11d *7/08, 7/50*
U.S. Cl. 252—316 12 Claims

Thickened compositions comprising about 1.5 to 20 percent of particulate proteinaceous material obtained from legume seeds, about 20.0 to 55.0 percent of a protic acid and about 40.0 to 75.0 percent of a thickening component which is water, an alkanol, an alkylcarbonyl compound or mixtures thereof. Process for preparing such compositions.

3,635,837

SPRAY-FORMED SODIUM NITRATE

Homer L. Robson, Hamden, Conn., assignor to Olin Mathieson Chemical Corporation

Original application July 28, 1967, Ser. No. 656,688, now Patent No. 3,560,396, dated Feb. 2, 1971. Divided and this application May 18, 1970, Ser. No. 48,751
Int. Cl. B01j *1/16*
U.S. Cl. 252—397 6 Claims

Sprayed-formed sodium nitrate preparations containing added diluents.

3,635,838

REGENERATION OF UNSUPPORTED VANADIUM SULFIDE CATALYST

John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 2, 1970, Ser. No. 8,057
Int. Cl. B01j *11/76, 11/02*
U.S. Cl. 252—415 5 Claims

A carbonized, unsupported nonstoichiometric vanadium sulfide catalyst is regenerated by way of a three-stage treatment at elevated temperatures. In the first stage, carbon is removed from the catalyst by contacting with elemental sulfur at an elevated temperature in the range of about 500° to about 1,000° C. The substantially carbon-free catalyst is treated with a mineral acid, or anhydrous HF, to dissolve metallic contaminants, and further treated in a third stage with elemental sulfur at a temperature in the range of 300° to about 500° C. to form vanadium tetrasulfide.

ERRATUM

For Class 252—429 see:
Patent No. 3,636,019

3,635,839

MODIFIED CATALYST SYSTEM FOR STEREOSPECIFIC POLYMERIZATION OF OLEFINS

Raymond Eichenbaum, Providence, R.I., and James G. Murray, East Brunswick, N.J., assignors to Mobil Oil Corporation

Filed Sept. 11, 1968, Ser. No. 759,238
Int. Cl. B01f *13/00*
U.S. Cl. 252—429 2 Claims

Homopolymers and copolymers of 1-olefins (C_3–C_{10}) having a high degree of tacticity are produced in the presence of a novel catalyst system composed of (A) a compound of a transitional metal of Groups IVA, VA, VIA, and VIII of the Periodic Arrangement of the Elements wherein the metal is present in a valence state lower than its maximum and (B) the reaction product of a dialkyl-aluminum chloride and iodine.

3,635,840

POLYMERIZATION CATALYST

Robert A. Hinton, Lawrence, Kans., assignor to Phillips Petroleum Company

Filed Mar. 17, 1969, Ser. No. 807,931
Int. Cl. C08d 3/04
U.S. Cl. 252—430 4 Claims

A catalyst is prepared by calcining and thus coactivating with an oxygen-containing gas for a period of time to activate the same, to obtain disclosed results, the ingredients of a mass obtained by bringing together an organometal component, chromium oxide or a compound convertible by calcination to chromium oxide, in combination with at least one material selected from the group consisting of silica, alumina, zirconia, and thoria and a vanadium chelate component, e.g., vanadium acetylacetonate. The catalyst is suited to the polymerization of olefinic materials, especially 1-olefins and/or dienes to form polymers and copolymers, e.g., polyethylene.

The catalyst permits polymerization of an alpha olefin to produce polymers having a considerably lower melt index at constant conditions than that earlier obtained with a catalyst omitting the vanadium acetylacetonate and productivities per unit of catalyst which are considerably greater than those obtained when the vanadium acetylacetonate is not present during coactivation.

3,635,841

NOVEL ANTHRAQUINONE HYDROGENATION CATALYST

Carl D. Keith, Summit; Kurt W. Cornely, Westfield, and Nathan D. Lee, Lambertville, all of N.J., assignors to Engelhard Minerals and Chemicals Corporation, Newark, N.J.

Filed June 16, 1969, Ser. No. 833,678
Int. Cl. B01j 11/08, 11/22
U.S. Cl. 252—466 PT 3 Claims

A novel hydrogenation catalyst, especially useful for the catalytic hydrogenation of an anthraquinone working compound in the process for producing hydrogen peroxide, is described containing at least 0.05 percent by weight of metallic palladium dispersed on alumina supporting spheres, wherein the major crystalline structure of the alumina spheres is in the form of delta-alumina, theta-alumina, or mixtures of delta- and theta-aluminas and is substantially free of alpha-alumina, gamma-alumina or alpha-alumina monohydrate, wherein the alumina spheres have substantially no pores larger than about 0.06 micron, a BET surface area of over 20 $m.^2/gm.$, and wherein the palladium metal penetration into the pores of the supporting alumina surface is no more than about 40 or 50 microns.

3,635,842

SHORT LIFE PAPER SIZE FROM MODIFIED POLYALKYLENE-IMINES

Juan Longoria, III, and William P. Coker, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 27, 1966, Ser. No. 560,640
Int. Cl. C08g 33/08
U.S. Cl. 260—2 BP 20 Claims

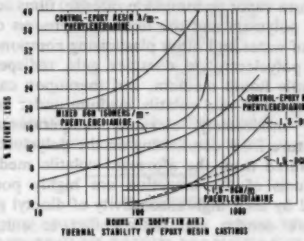
Unique water-soluble polymers are prepared by reacting a polyalkylenepolyamine or a polyalkylenimine with an epoxide or an activated aziridine; the epoxide and aziridine rings are each connected to a hydrocarbon radical having at least eight carbon atoms through generally an ether, ester, carboxamide or phosphoramide linkage. The polymers are particularly useful as temporary paper sizes, i.e., the polymers impart a sizing effect which disappears after some days without affecting the absorbency characteristics of the paper after that time.

3,635,843

CRYSTALLINE 1,5-DIGLYCIDYLNAPHTHALENE AND CURED PRODUCTS THEREOF

Harvey L. Parry, Summit, and Alton J. Landua, Maplewood, both of N.J., assignors to Shell Oil Company, New York, N.Y.

Filed July 17, 1969, Ser. No. 842,526
Int. Cl. C08g 23/20
U.S. Cl. 260—2 N 8 Claims



The preparation of crystalline 1,5-diglycidylnaphthalene is described. The present invention is further directed to curable and cured compositions of 1,5-diglycidylnaphthalene.

3,635,844

CURABLE MOLDING COMPOSITIONS COMPRISING A POLYEPOXIDE AND A HYDANTOIN

Daniel Porret, Binningen; Juergen Habermeier, Allschwil; Wolfgang Seiz, Basel, and Willy Fatzer, Bottmingen, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Nov. 17, 1969, Ser. No. 877,484
Claims priority, application Switzerland, Nov. 22, 1968, 17418/68
Int. Cl. C08g 30/14
U.S. Cl. 260—2 N 14 Claims

Curable molding, coating and adhesive compositions which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A, and, as the curing agent, an N,N′-di-(γ-aminopropyl)-hydantoin, for example 1,3-di-(γ-aminopropyl)-5,5-dimethyl-hydantoin. Curing can be carried out at relatively low temperatures, for example at 40° C. The new type of curing agent bridges, in respect of its gradation of reactivity, a gap between aliphatic polyamines and cycloaliphatic polyamines. The new curing agents furthermore have the advantage relative to the aromatic polyamines of being nontoxic.

3,635,845

CURABLE COMPOSITIONS OF MATTER CONTAINING A POLYEPOXIDE AND A HYDRANTOIN COMPOUND

Daniel Porret, Binningen; Juergen Habermeier, Allschwil, and Wolfgang Seiz, Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Nov. 18, 1969, Ser. No. 877,845
Claims priority, application Switzerland, Nov. 28, 1968, 17735/68
Int. Cl. C08g 30/14
U.S. Cl. 260—2 N 11 Claims

Curable moulding, coating and adhesive compositions which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A and, as the curing agent, a 1,1′-methylene-bis-(3-γ-aminopropyl-hydantoin), for example 1,1′-methylene-bis-(3-γ-aminopropyl-5,5-dimethyl-hydantoin). The curing can take place at relatively low temperatures. The new type of curing agent bridges, in the gradation of the activity, a gap between aliphatic polyamines and cycloaliphatic polyamines. The new curing agents furthermore have the advantage, relative to the aromatic polyamines, of being nontoxic.

3,635,846

EXPANDED POLYELECTROLYTE RESIN AND PROCESS FOR MAKING SAME

Stephen A. Splitz, Scituate, Mass., assignor to Amicon Corporation, Cambridge, Mass.

Filed July 13, 1967, Ser. No. 653,004
Int. Cl. C08f 47/08, 33/08
U.S. Cl. 260—2.5 R 4 Claims

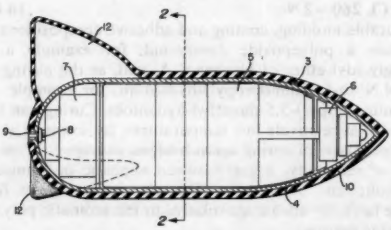
A process for making highly expanded polyelectrolyte gel powders suitable for incorporation into, and imparting improved moisture vapor transmission rates to, films comprising hydrophobic polymers and the like. This process comprises the removal of water and other plasticizing components from precipitated polyelectrolyte complex gels, redispersing the gel in a volatile liquid medium, and thereupon causing the rapid evaporation of said volatile medium under conditions, conveniently moderately elevated temperatures, which prevent moisture from condensing on the polyelectrolyte gel as it is separated from the aforesaid volatile medium. The unique products of the invention are highly porous and characterized by their high absorptivity of dioctyl phthalate, their low-bulk density and their ability to enhance the moisture vapor transmission of a standard polyvinylchloride film formulation by a factor in excess of about 5 when incorporated therein at loadings of about 15 percent on total polymer weight.

3,635,847

EXPLOSIVE ASSEMBLY INCLUDING A BODY PORTION AND A CLOSURE HAVING A COVERING OF ELASTOMERIC MATERIAL

Theodore A. Evans, and Marvin T. Conger, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 24, 1968, Ser. No. 786,666
Int. Cl. C08f 47/10; C08j 1/20
U.S. Cl. 260—2.5 FP 4 Claims



This invention relates to an explosive assembly having a body portion and closures therefor, the body portion and closures having a covering of an ablative elastomeric material where the elastomeric material is polybutadiene acrylonitrile, polychloroprene and mixtures thereof with polyvinyl chloride that is compounded with a curative, plasticizer and a burn resistant agent, preferred plasticizers being phenol formaldehyde resin or polyethylene of 8,000 to 15,000 molecular weight.

3,635,848

ISOCYANURATES, POLYISOCYANURATES AND POLYURETHANES AND THEIR PREPARATION USING AS A CATALYST A COORDINATION COMPOUND OF AN ORGANIC BORATE ESTER AND AN ALKALI OR ALKALINE EARTH METAL

George M. Rambosek, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 618,035, Feb. 23, 1967. This application July 10, 1969, Ser. No. 840,854
Int. Cl. C08g 22/44, 22/34
U.S. Cl. 260—2.5 AB 26 Claims

Isocyanates are trimerized, polymerized, or reacted with polyols, in the presence of a new catalyst comprising an organic borate ester and a base metal to produce isocyanurates, polyisocyanurates, urethane-modified polyisocyanurates, or isocyanurate-modified polyurethanes.

3,635,849

POLYISOBUTYLENE PARAFFIN WAX AND OIL BLENDS

Alden W. Hanson, Midland, Mich., assignor to University Patents, Inc., Chicago, Ill.

Filed Sept. 8, 1969, Ser. No. 856,150
Int. Cl. C08f 29/06
U.S. Cl. 260—2.5 B 5 Claims

A novel composition of matter consisting essentially of from about 5 percent to about 45 percent of a polyolefin, particularly polyisobutylene, which has a molecular weight greater than 120,000, from about 15 percent to about 70 percent of a paraffin having a melting point between 40° C. and 100° C. and from about 5 percent to about 80 percent oil with or without minor diluents or other constituents. Composition is characterized by inertia to instantaneous pressure, conformance upon application of pressure and resistance to sag, as well as having cold flow characteristics to a resistance of gravity plus about 2 gms./in.^{2} or above. Also is directed to the process of making such composition.

3,635,850

FLAME RETARDANT COMPOSITIONS OF STYRENE POLYMERS AND BROMINATED HEXAMETHYL BENZENE

Helmut Birkner; Willi Ziegenbein, and Anton, Schick; all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Sept. 8, 1969, Ser. No. 856,208
Claims priority, application Germany, Sept. 20, 1968, P 17 94 182.1
Int. Cl. C08d 7/10, 11/04; C08j 1/18
U.S. Cl. 260—2.5 FP 9 Claims

A fire resistant composition of styrene polymers containing as fireproofing agents the bromination products of hexamethyl benzene in amounts of about 1–20 percent by weight based on the styrene polymers. In addition to the bromination products of hexamethyl benzene, the composition can include organic chlorine compounds, antimony trioxide and/or foaming agents.

3,635,851

POLYURETHANE ELASTOMERS AND FOAMS PREPARED FROM POLYAMINE CURING AGENTS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 781,276, Dec. 4, 1968, now abandoned, Continuation-in-part of application Ser. No. 668,961, Sept. 19, 1967, now abandoned, Continuation-in-part of application Ser. No. 631,868, Apr. 19, 1967, now abandoned, Continuation-in-part of application Ser. No. 552,704, May 25, 1966, now abandoned. This application Nov. 20, 1969, Ser. No. 878,560
Int. Cl. C08g 22/00, 22/04
U.S. Cl. 260—2.5 AM 19 Claims

Amine curing agents for polyurethane foams and elastomers obtained by condensing a monoamine composition with formaldehyde in the presence of a mineral acid. The monoamine can be 2-chloroaniline or mixtures of 2-chloroaniline with aniline and/or o-toluidine. The proportions of reactants are selected to produce curing agents which have moderate reactivities and exhibit a limited tendency to crystallize under normal operating conditions. The amine compositions are particularly useful as curing agents in the preparation of polyurethane foams. The new compounds, 3-chloro-4,4′-diaminodiphenylmethane and 3-chloro-3′-methyl-4,4′-diaminodiphenylmethane can be obtained from appropriate reaction products.

3,635,852

PROCESS OF MAKING A GENERAL PURPOSE EXPANDABLE ALKENYL AROMATIC POLYMER CONTAINING DI-ALKYL POLYSILOXANE INTERNALLY

Arnold B. Finestone, Roger Miller, and Michal Niechwiadowicz, Leominster, Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

No Drawing. Continuation of application Ser. No. 667,657, Sept. 14, 1967. This application Dec. 15, 1969, Ser. No. 882,377

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 B 8 Claims

Expandable alkenyl aromatic polymer compositions are prepared by polymerizing in aqueous suspension an alkenyl aromatic monomer having mixed therein about 0.0005 to 0.05% by weight of a liquid organically disubstituted polysiloxane and thoroughly washing the resulting expandable particulate product.

3,635,853

ADHESIVE COMPOSITION FOR PREPARATION OF A LAMINATED PHOTOGRAPHIC IDENTIFICATION CARD COMPRISING GELATIN, A COPOLYMER LATEX OF POLYVINYL ACETATE AND AN ALKYL ESTER OF AN UNSATURATED CARBOXYLIC ACID, A PLASTICIZER AND A SOLVENT

Donald G. Wiest, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original application Aug. 7, 1967, Ser. No. 658,705, now Patent No. 3,520,758. Divided and this application Dec. 10, 1969, Ser. No. 883,850

Int. Cl. C09 *11/00*

U.S. Cl. 260—8 1 Claim

An embossable identification or credit card has been made by laminating the photographic emulsion layer of a transparent photographic film to a rigid substrate using an adhesive based on a latex of polyvinyl acetate copolymerized with an alkyl ester of an unsaturated carboxylic acid to which gelatin, gelatin plasticizer and an attack solvent for the substrate are added. The migration of the plasticizer from the adhesive into the emulsion during and subsequent to lamination causes an increased hardening and/or plasticizing of the emulsion and improves cohesive bonding within the emulsion, and consequently the overall toughness, durability and quality of the identification card produced. Alternatively, the gelatin plasticizer may be wiped onto the surface of the photographic emulsion layer just prior to the lamination.

3,635,854

FOOTWEAR WITH ADJUSTABLE-LENGTH SHANK

Wesley G. Martin, Manitowoc, Wis., assignor to Aluminum Specialty Company, Manitowoc, Wis.

Filed Aug. 8, 1969, Ser. No. 848,626

Int. Cl. A63c *17/02*

U.S. Cl. 280—11.26 7 Claims

To provide a roller skate of adjustable length, a first shank member and a second shank member overlap and are held at any one of several positions by a leaf spring that has its base mounted to the top shank member and has a tab on its other end receivable between any of several parallel arms within a slot of the bottom shank member. It is held to the top member by a bolt having its head rigidly affixed to the top member and its threaded portion in the slot in the bottom member which bottom member is between the top member and the spring. To change the length of the roller skate, a finger grip on the end of the leaf spring is pulled downward to remove the tab from between two pairs of arms and the members are adjusted in length, after which, the tab is inserted between two other pairs of arms.

3,635,855

PHOTOGRAPHIC ARTICLES AND MATERIALS USEFUL IN THEIR MANUFACTURE

Howard F. Earhart, Frederick J. Jacoby, and Clemens B. Starck, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Nov. 25, 1966, Ser. No. 596,803, now Patent No. 3,516,832, dated June 23, 1970. Divided and this application Oct. 2, 1969, Ser. No. 870,775

Int. Cl. C08f *45/08*; G03c *1/82*

U.S. Cl. 260—17 R 3 Claims

This development relates to film materials that are especially adapted for use as photographic film units in film packs which, in turn, are preferably adapted for development outside the camera. The photographic films for this invention are comprised of a black film base having on one surface thereof a layer containing spherical polymeric beads, carbon black and low viscosity cellulose nitrate (to provide improved adhesion to the film base). Optionally, on the other surface is a white layer containing titanium dioxide pigment and low viscosity cellulose nitrate, a gel sub layer, and finally a photographic emulsion. This application is directed to the coating compositions which are particularly useful in the coating of the black film base.

3,635,856

POLYVINYL CHLORIDE COMPOSITIONS

Akira Kaneko, Tadashi Ogino, and Yoshiyuki Hata, Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 637,368, May 10, 1967. This application Oct. 23, 1969, Ser. No. 868,932

Claims priority, application Japan, May 10, 1966, 41/29,508; Dec. 19, 1966, 41/83,137

Int. Cl. C08b *29/30*; C08f *3/30, 45/58*

U.S. Cl. 260—17.4 8 Claims

Non-toxic polyvinyl chloride compositions comprising a major portion of polyvinyl chloride containing a stabilizer composed of a mixture of (1) a polyhydric alcohol, (2) zinc, calcium and/or magnesium salts of a fatty acid, (3) an epoxidation product of a vegetable fat or oil, and (4) at least one additive selected from the group consisting of (a) a sucrose alkyl ester and (b) a semiester of an organic polybasic acid having at least one free carboxy group per molecule. Examples of suitable sucrose alkyl esters are the sucrose lauryl, myristyl and stearyl esters. Examples of suitable semiesters of polybasic organic acids are the monoesters of maleic, fumaric, itaconic, thiodiglycolic, thiodipropionic, diglycollic, citric, tartaric, malic and phthalic acids.

3,635,857

GRAFT COPOLYMERS OF STARCH

Alfred Restaino, Lawrence Township, and Weldon N. Reed, Pennington, N.J., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Continuation of application Ser. No. 594,264, Nov. 14, 1966, which is a continuation of application Ser. No. 258,119, Feb. 13, 1963, which in turn is a continuation-in-part of application Ser. No. 177,150, Mar. 5, 1962. This application Dec. 12, 1969, Ser. No. 880,507

Int. Cl. C08b *25/02*; C08f *1/24*

U.S. Cl. 260—17.4 9 Claims

A process for preparing graft copolymers of water-soluble vinyl monomers to starch which comprises irradiating starch with high energy ionizing radiation to a dose of from 0.1 to 30 megarads in the presence of oxygen and reacting the irradiated starch with a water-soluble vinyl monomer in aqueous solution containing a dissolved catalyst capable of forming free radicals by reaction with hydroperoxides. Water-soluble graft copolymers containing exceptionally high molecular weight grafted side chains are obtained which are excellent flocculating agents.

3,635,858

PATTERN PAINT

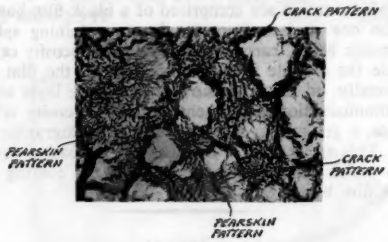
Wataru Shiratori, Ichikawa-chi, Japan, assignor to Toyo Kasei Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1969, Ser. No. 848,569

Claims priority, application Japan, Aug. 9, 1968, 43/56,127

Int. Cl. C09d *3/64, 3/72, 5/28*

U.S. Cl. 260—22 R 4 Claims



A paint for producing graceful intermingled patterns of pearskin patterns and crack patterns formed by applying the paint on an undercoat painted on any article to be painted, said paint being composed of zinc stearate, organic solvents and synthetic resin consisting of polyvinyl chloride or polyester, the undercoat being formed by applying the same or similar resin as contained in the said paint, the formation of patterns being caused by the ionizing action of zinc stearate and different evaporating velocities of the organic solvents.

3,635,859

IMPROVEMENTS RELATING TO ALKYD RESINS

Beppino Passalenti, Silvio Vargiu, and Ugo Nistri, Milan, Italy, assignors to Società Italiano Resine S.p.A., Milan, Italy

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,335

Claims priority, application Italy, Dec. 31, 1968, 25,747/68, Patent 852,646

Int. Cl. C08g *17/013, 7/16*

U.S. Cl. 260—22 M 4 Claims

Alkyd resins are prepared by having an organic phosphite present in the monomer condensation stage and treating the condensation product with a metal salt and a peroxide.

3,635,860

EPOXY SOLDERS

George A. Salensky, Metuchen, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,316

The portion of the term of the patent subsequent to June 10, 1986, has been disclaimed

Int. Cl. C08g *45/04, 51/04*

U.S. Cl. 260—23.7 17 Claims

This invention relates to epoxy solders, based on cycloaliphatic dieopoxides and dimers of unsaturated fatty acids in admixture with polymers of butadiene, which are suitable for use as automotive body solders on electro coated or primed surfaces.

3,635,861

PRESSURE-SENSITIVE HOT-MELT ADHESIVES

Thomas E. Russell, Verona, N.J., assignor to The Flintkote Company, White Plains, N.Y.

No Drawing. Filed June 28, 1968, Ser. No. 741,231

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 9 Claims

A pressure-sensitive adhesive composition having instant room temperature tack, good cold flow-resistance and good shear strength which comprises as a first component a resinous rubbery block copolymer of styrene and butadiene or isoprene, as a second component a rubber extending petroleum oil, and as a third component a modified or unmodified rosin, a coumarone-indene resin, a polyterpene resin, a diene-olefin aliphatic hydrocarbon resin or a polystyrene resin, and optionally as a fourth component a resinous atactic polypropylene.

3,635,862

STABILIZED POLYMER COMPOSITIONS

John Robert Dunn, Sarnia, Ontario, Canada, assignor to Polymer Corporation, Sarnia, Ontario, Canada

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,856

Claims priority, application Canada, Jan. 16, 1969, 40,289

Int. Cl. C08c *11/60*; C08d *9/00*

U.S. Cl. 260—27 BB 7 Claims

Resistance to aging of a polymer of conjugated diolefin such as a high cis-1,4 polybutadiene or a block copolymer of butadiene and styrene or alpha methyl styrene is improved by the addition of 0.1–5 parts of a compound such as 2-mercaptobenzimidazole, 2-mercaptobenzoxazole or a hydrocarbyl substituted dithiohydantoin.

3,635,863

METHOD OF IMPROVING BITUMINOUS MATERIALS

John J. Drukker, Wyckoff, N.J., assignor to The Flintkote Company, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 686,693, Nov. 29, 1967. This application Dec. 16, 1969, Ser. No. 885,610

Int. Cl. C08d *9/12*

U.S. Cl. 260—27 16 Claims

There is disclosed herein a method for modifying the properties of bituminous materials by dispersing in such materials at a temperature below about 220° F. a water-in-oil emulsion of an aqueous elastomeric polymer in an oil carrier, and thereafter evaporating water from the aqueous phase at a temperature below about 275° F.

3,635,864

COAL TAR AND MERCAPTAN-TERMINATED POLYMER COMPOSITIONS

William J. McCarthy and Robert W. Ireland, Avon Lake, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 28, 1969, Ser. No. 871,944

Int. Cl. C07d *35/28, 43/28*

U.S. Cl. 260—28.5 AS 8 Claims

Blends of mercaptan-terminated liquid copolymers and coal tar form curable sealant compositions that may be cured with suitable curing agents to form elastomers having adhesion to cementitious materials and are suitable for sealing concrete and forming elastomeric gaskets.

3,635,865

PLASTICIZED TERMINALLY ACTIVE LIQUID DIOLEFIN POLYMERS CONTAINING POLYALKYLENIMINES

Douglas C. Edwards and Premysl Thomas Dolezal, Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,366

Claims priority, application Canada, Feb. 10, 1969, 42,428

Int. Cl. C08d *11/02*

U.S. Cl. 260—28.5 9 Claims

The retardation of the rate of vulcanization of highly extended compositions of liquid polymers of conjugated diolefins having terminal allylic halide groups has been found to be lessened or even overcome by the use of a poly(alkylenimine) containing more than five amine groups and having a molecular weight of at least about 250.

3,635,866

FLAME-RETARDANT POLYBUTENE-1 COMPOSITIONS

Francis M. Seger, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Dec. 24, 1969, Ser. No. 888,061

Int. Cl. C08f *45/52, 45/60;* C09k *3/28*

U.S. Cl. 260—28.5 R 4 Claims

Flame-retardant polybutene-1 compositions contain three additives; antimony trioxide, ammonium fluoborate, and another halogen-containing compound having 60–90 percent halogen. These compositions are characterized by having a total flame-retardant additive content of 15 weight percent or less and by having a burning time of less than two seconds before self-extinguishment.

3,635,867

POLYMERIZATION PROCESS FOR MAKING AQUEOUS ACRYLIC-CONTAINING EMULSIONS

Ernest Clark Yuille, Louisville, Ky., assignor to Celanese Coatings Company, New York, N.Y.

No Drawing. Filed Dec. 5, 1967, Ser. No. 687,969

Int. Cl. C08f *1/84, 15/00*

U.S. Cl. 260—29.4 UA 8 Claims

A process for producing the improved aqueous acrylic-containing emulsions for blister resistant paints and to the products thereof prepared by the addition of an amino resin prior to or during the polymerization, in an aqueous solution, of an alkyl ester of a polymerizable alpha beta unsaturated monocarboxylic acid and a monomer containing a single $H_2C{=}C$ group. The polymerization occurs in the presence of a polymerizable unsaturated carboxylic acid, a catalytic amount of a free radical polymerization catalyst and a surfactant. The interpolymer formed is capable of continuous film formation at 40° C. or below.

3,635,868

STABLE AQUEOUS EMULSIONS OF FUNCTIONAL GRAFT POLYMERS FROM VINYL LACTAM POLYMERS

Eugene S. Barabas, Watchung, and Marvin M. Fein, Westfield, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed May 4, 1970, Ser. No. 34,569

Int. Cl. C08f *19/00, 19/02*

U.S. Cl. 260—29.6 RW 10 Claims

Stable aqueous emulsions comprising grafted terpolymers of a polymeric N-vinyl lactam, such as polyvinyl pyrrolidone, with an arylalkene (e.g. styrene or vinyl toluene) and a vinyl ketone (e.g. methyl vinyl ketone).

3,635,869

CATALYSIS OF EPOXY RESIN/CARBOXYLIC ACID SYSTEMS WITH TRIVALENT CHROMIUM III TRICARBOXYLATE SALTS

Roger B. Steele, Fair Oaks, and Arthur Katzakian, Jr., and Joseph J. Scigliano, Sacramento, Calif., and Jude W. Barry, Beaverton, Oreg., assignors to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,053

Int. Cl. C08g *51/26, 51/34*

U.S. Cl. 260—30.4 EP 9 Claims

This patent describes a novel storable epoxy resin system comprising a curable epoxy resin and a carboxylic acid or acid anhydride; the improvement wherein the system is provided with a chromium III tricarboxylate salt catalyst adapted to contain unoccupied coordination sites, deactivated with certain non-reactive, volatile, coordinating, electron donating solvents including methanol, ethanol, N,N-dimethylformamide, dioxane, tetrahydrofuran, dimethyl sulfoxide, dimethyl sulfolane, nitro alkanes, nitro aromatics, tetramethyl urea, N,N-dimethylacetamide, N-methylcaprolactam and N-methyl pyrollidone which solvent evaporates upon the application of the composition to a surface to reactivate the catalyst by the formation of occupied coordination sites, and resulting in reaction of the epoxy compound with the carboxylic acid or acid anhydride.

3,635,870

SEGMENTED POLYURETHANE ELASTOMERS

Wilhelm Thoma, Bergisch Neukirchen, Harald Oertel, Odenthal-Globusch, and Heinrich Rinke, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 7, 1970, Ser. No. 26,424

Claims priority, application Germany, Apr. 11, 1969, P 19 18 504.7

Int. Cl. C07c *125/04;* C08g *22/04*

U.S. Cl. 260—30.8 17 Claims

The invention relates to linear segmented polyurethane elastomers consisting of the reaction product of an isocyanate preadduct containing 1.0 to 6.0% by weight of free NCO groups with chain lengtheners, said polyurethane elastomers containing at least 55 mol percent, based on the total amount of chain lengthening segments, of a chain lengthening segment of the structure

—NH—CO—NH—NH—CO—NH—
R—O—CO—NH—NH—CO—NH—

wherein R is a divalent alkylene radical with 1 to 4 carbon atoms, an aromatic or an araliphatic radical.

3,635,871

CRUSHED POLYURETHANE ELASTOMERIC PRODUCT CONTAINING AN AMIDE AND METHOD FOR PRODUCING THE SAME

Takuo Kawaguchi and Kanji Matsubayashi, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan

No Drawing. Continuation-in-part of application Ser. No. 667,661, Sept. 14, 1967. This application Oct. 27, 1969, Ser. No. 869,928

Claims priority, application Japan, Oct. 21, 1966, 41/69,350

Int. Cl. C08g *51/44, 22/16, 53/00*

U.S. Cl. 260—32.6 4 Claims

The crushed polyurethane elastomeric product homogeneously containing an amide, which is excellent solubility in the solvents, good storage stability and easy handling to transportation, is produced by heat-treating the pulverized polyurethane elastomer, which was produced by the method of U.S. Pat. No. 3,446,771, at the range of the temperature of above 100° C. to 155° C. in the presence of an amide about 2 to 60 percent, based on the total weight of the polyurethane elastomer and an amide.

3,635,872

SOLUTIONS OF NORMALLY CRYSTALLINE VINYLIDENE CHLORIDE POLYMERS

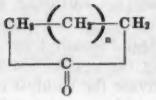
Ritchie A. Wessling, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1969, Ser. No. 885,101

Int. Cl. C08f *45/34*

U.S. Cl. 260—32.8 R 3 Claims

This invention relates to new solvents for normally crystalline vinylidene chloride polymers containing at least about 70 weight percent of vinylidene chloride in the polymer molecule and, more particularly, to useful compositions of matter comprising solutions of such vinylidene chloride polymers in one or more cyclic ketones having the formula



where *n* is an integer of from 4 through 13.

3,635,873

CEMENT/POLYTHIOL POLYMER SEALANTS

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,808

Int. Cl. C08g *51/04, 51/30*

U.S. Cl. 260—33.8 R 14 Claims

Low cost, non-sagging, package-stable sealant and caulking compositions containing 250–900 parts by weight of a filler consisting of about 50 to 100% of a finely divided, alkaline, hydraulic cement and preferably in addition, about 150 and 350 parts by weight of a non-volatile, liquid diluent per 100 parts by weight of liquid polythiol polymer. The compositions are extremely stable when protected from moisture and oxygen but cure slowly upon exposure to air without the use of an added curing agent to form non-brittle cured products which adhere to various substrates without shrinkage. The tack-free time of the compositions may be shortened by the inclusion of small amounts of calcium hydroxide, ethylene glycol, glycerine or naphthenate driers. Small amounts of titanium dioxide contribute non-staining properties.

3,635,874

FLAME RESISTANT SILICONE COMPOSITIONS CONTAINING FUME TITANIUM DIOXIDE

Thomas L. Laur, Sanford, and Peter Lamont, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 842,353, July 16, 1969. This application Apr. 20, 1970, Ser. No. 30,308

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB 36 Claims

A flame resistant silicone composition having improved flame resistance cures to a flame resistant silicone product, such as an elastomer. The silicone composition contains 100 parts by weight of a silicone polymer free of silicon bonded hydrogen atoms, 0 to 100 parts by weight of a reinforcing silica filler, 10 to 150 parts per million parts by weight based on the weight of the silicone polymer of platinum and 0.5 to 100 parts by weight of fume titanium dioxide having an average particle size of less than 0.10 micron. Additional flame resistant properties in the silicone compositions are observed by the addition of 0.05 to 2 parts by weight sulfur free carbon black to the silicone composition described above.

3,635,875

ADHESIVE COMPOSITION

Thomas D. Reither, Pleasant Lake, Mich., and Ralph E. Trease, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed Dec. 26, 1967, Ser. No. 693,104

Int. Cl. C08k *1/08*

U.S. Cl. 260—37 EP 8 Claims

This invention relates to an adhesive composition which contains at least one bisphenol-A/epichlorohydrin resin, a polyglycol diepoxide resin, dicyandiamide, glycidoxypropyltrimethoxysilane, and finely divided silica. The subject adhesive is useful in bonding stainless steel to glass.

3,635,876

THERMOPLASTIC MATERIAL COMPOSITIONS

Jean Chameroy, Guyancourt, France, assignor to Societe Anonyme Groupement Atomique Alsacienne Atlantique (G.A.A.A.), Le Plessis-Robinson, France

No Drawing. Continuation of application Ser. No. 594,703, Nov. 16, 1966, which is a continuation-in-part of application Ser. No. 524,831, Feb. 3, 1966. This application Aug. 6, 1969, Ser. No. 849,288

Claims priority, application France, Nov. 19, 1965, 39,137

Int. Cl. C08g *37/04;* C08f *29/12;* G01t

U.S. Cl. 260—37 5 Claims

A termoplastic composition is provided having a response equivalent to β, γ and X radiations and neutrons equivalent to that of organic tissue. The composition contains (1) about 55 to 70% by weight of polypropylene or polyethylene (2) 10 to 15% by weight of polyacetal and (3) 20 to 30% by weight of magnesium oxide or hydroxide; or, (1) the same amount of polypropylene or polyethylene (2) 15 to 25% of polyacetal and (3) 15 to 20% of alumina.

3,635,877

USE OF HETEROCYCLIC ACIDS IN PHENOLIC RESINS

Paul H. Van Wyk, Forest Park, Ill., assignor to CPC International Inc.

No Drawing. Filed July 7, 1969, Ser. No. 839,699

Int. Cl. C08g *51/04*

U.S. Cl. 260—38 34 Claims

Covers a composition comprising, as a major component, solid discrete inert filler particles, and as a minor component, a thermosetting phenolic resin composition. The phenolic resin composition comprises the reaction product of an aldehyde with a phenolic compound in the

ratio of between about 0.5 and about 0.85 mole of aldehyde per mole of phenolic compound, a cross-linking agent, and a heterocyclic acid which imparts a high degree of fluidity to the resin in its fused state in an amount falling within the range from about 0.5% to about 12% by weight based on total weights of the aldehyde and the phenolic compounds. A process for preparing the composition described above is disclosed. Molded products made from the composition are also set out. In particular, the composition can be made into shell molds and cores. The molds and cores exhibit significantly reduced peel back.

3,635,878

RESINOUS SYSTEMS CONTAINING CARBODIIMIDE MODIFIED CLAY

Stanley E. Gebura, Mountain Lakes, N.J., assignor to Interpace Corporation, Parsippany, N.J.

No Drawing. Original application May 1, 1968, Ser. No. 725,927, now Patent No. 3,556,829, dated Jan. 19, 1971. Divided and this application Mar. 27, 1970, Ser. No. 29,723

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **4 Claims**

A process has been provided for modifying with an organic compound a high surface area siliceous substance. According to this process, the siliceous substance is reacted with a carbodiimide such as cyclohexylcarbodiimide. Products prepared by this process are within the scope of the invention as are the uses of these products for purposes as adjuvants in poly(ester) and oleaginous composition formulations.

3,635,879

PROCESS FOR THE PREPARATION OF GLASS CONCENTRATES IN A THERMOPLASTIC MATRIX

Massimo Baer, Longmeadow, and Joseph O. Campbell, Agawam, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 4, 1969, Ser. No. 874,012

Int. Cl. C08f *1/84*

U.S. Cl. 260—41 AG **16 Claims**

Disclosed herein is a process for the preparation of glass concentrate capsules which comprise a plurality of strands of glass fibers encapsulated in a collimated array within a thermoplastic resin matrix which process comprises:

(1) Wetting the strands of glass fibers with monomer;

(2) Suspending the strands of glass fibers in an aqueous medium containing a critical amount of protective colloid;

(3) Agitating the suspension using a low shear type of agitation which moves the whole suspension mass while avoiding localized high shear agitation;

(4) Polymerizing the monomer; and

(5) Recovering the glass concentrate capsules.

3,635,880

CURABLE COMPOSITIONS FOR MAKING HIGH TEMPERATURE STABLE CURED —SH TERMINATED POLYSULFIDE POLYMER

Osvaldo Lamboy and Daniel J. Smith, Morrisville, Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 10, 1969, Ser. No. 875,008

Int. Cl. C08f *45/54;* **C08g** *51/54*

U.S. Cl. 260—45.7 **21 Claims**

An alkaline earth metal oxide, e.g. magnesium oxide, is essentially included in a curable polymeric composition comprising in admixture —SH terminated liquid organic polysulfide polymer, organic peroxide and cupric abietate or 2,4,6-tri(dimethylaminomethyl)phenol, thereby rendering the cured elastomeric product formed upon curing the curable composition stable at temperatures in the range from about 150° to 300° F.

3,635,881

VINYL CHLORIDE POLYMERS STABILIZED WITH N-HETEROCYCLIC DISULFIDES

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 10, 1967, Ser. No. 674,127

Int. Cl. C08f *45/58, 45/60*

U.S. Cl. 260—45.8 N **5 Claims**

A solid polymer composition consisting of a hydrocarbon, a substituted hydrocarbon, a polyester, a vinyl polymer and copolymers and terpolymers thereof, stabilized against ultraviolet light degradation and oxidation caused by heat and air wherein a stabilizing amount of a dicyclic sulfide is intermixed with the polymer or the dicyclic disulfide is used as a synergist in combination with conventional phenolic antioxidants.

3,635,882

STABILIZED OXYMETHYLENE POLYMERS

Leon Starr, Plainfield, David Jon Runyon, Brick Township, Ocean County, and Albert T. Mills, Somerville, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,147

Int. Cl. C08g *51/56, 51/58, 51/60*

U.S. Cl. 260—45.9 P **7 Claims**

Oxymethylene polymers are stabilized by a novel stabilizer which comprises a phosphine or phosphine oxide, an oxymethylene polymer antioxidant and metal oxide. This unique stabilizer need only be used in very limited quantities to impart a synergistic improvement in thermal stability. A preferred composition comprises (A) a tertiary phosphine oxide, (B) a phenolic antioxidant, and (C) an alkaline earth metal oxide. On molding these novel compositions, there are no mold deposits.

3,635,883

STABILIZED STYRENE-ACRYLONITRILE POLYMER COMPOSITIONS

Walter Stamm, Carmel, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 728,360, May 10, 1965, now Patent No. 3,539,527, dated Nov. 10, 1970. This application May 7, 1970, Ser. No. 35,584

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K **21 Claims**

There are disclosed high molecular weight styrene-acrylonitrile polymer compositions exhibiting a high degree of stability containing an effective concentration of a stabilizer mixture comprising: (a) a C_2–C_8 alkyl stannoic or C_2–C_8 alkyl thiostannoic acid and (b) a compound having the formula:

$$(R-\underset{\underset{O}{\|}}{C}-S)_n-X$$

wherein R is a hydrocarbyl group containing from 3 to about 21 carbon atoms, *n* is an integer having a value of from 1 to 2, X is selected from the group consisting of hydrogen, alkali metal, alkaline earth metals and acyl moieties having a hydrocarbyl essentially hydrocarbon residue and containing from about 1 to about 17 carbon atoms inclusive. This combination of stabilizers has proven to be particularly effective in acrylonitrile-butadiene-styrene copolymer compositions. Included among the preferred stabilizers of group (a) are: ethyl stannoic acid; n-butyl stannoic acid; n-butyl thiostannoic acid; and, n-octyl stannoic acid while the preferred stabilizers of group (b) include thiollauric anhydride; thiollauric acid; thiololeic anhydride; thiolbenzoic anhydride and thiolstearic anhydride. This stabilizing system is one of the few proposed for styrene-acrylonitrile type resins which is not based on a hindered phenol.

3,635,884

ORGANIC COMPOSITIONS STABILIZED WITH PHOSPHORUS-CONTAINING ADDITIVES

Bernard R. Meltsner, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Application Nov. 21, 1966, Ser. No. 595,613, now Patent No. 3,493,638, dated Feb. 3, 1970, which is a continuation-in-part of application Ser. No. 505,990, Nov. 1, 1965. Divided and this application Nov. 5, 1969, Ser. No. 874,416

Int. Cl. C08c *27/64*; C08d *11/04*; C08f *45/58*

U.S. Cl. 260—45.85 8 Claims

A new class of antioxidants is prepared by the reaction of phosphorus trihalides with 2,6-dihydrocarbyl-p-hydroquinones. A typical example is the product prepared by the reaction of phosphorus trichloride with 2,6-di-tert-butyl-p-hydroquinone. A major component of the reaction product has been identified as tris(3,5-di-tert-butyl-4-hydroxyphenyl)phosphite. Another component present in lesser amounts is bis(3,5-di-tert-butyl-4-hydroxyphenyl) hydrogen phosphonate. Both the reaction product and the pure tris(3,5-di-tert-buty-4-hydroxyphenyl)phosphite have been found to be antioxidants in organic materials, especially in polypropylene and lubricating oil. They also exhibit a synergistic antioxidant response with dialkyl thiodialkanoates such as dilaurylthiodipropionate.

3,635,885

POLYOLEFINS STABILIZED WITH ALKENYL PHENOLS

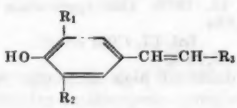
William H. Starnes, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed July 28, 1969, Ser. No. 845,486

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 4 Claims

The hindered alkenyl phenols having the following structure are useful as antioxidants for hydrocarbons and especially for polyolefins such as polypropylene and are produced by the reaction of a chloromethylphenol and a trialkylphosphine, reacting the intermediate formed with a hydroxide or alkoxide to yield the corresponding zwitterion, and then reacting the zwitterion with either an aromatic or an aliphatic aldehyde to produce the following structures:



where

R_1 and R_2 are alkyls having 1 to 8 carbon atoms, preferably a tertiary alkyl; and

R_3 is selected from the group consisting of alkyl and aryl.

3,635,886

POLYOLEFINS STABILIZED WITH ALKENYL PHENOLS

William H. Starnes, Jr., and Tad L. Patton, Baytown, Tex., assignors to Esso Research and Engineering Company

No Drawing. Original application Oct. 2, 1967, Ser. No. 671,975, now Patent No. 3,526,668, dated Sept. 1, 1970. Divided and this application July 30, 1969, Ser. No. 846,230

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 8 Claims

A composition consisting essentially of a solid polymer of an alpha-monoolefin such as polypropylene or polyethylene and an oxidation resistant amount of a selected alkenyl phenol.

3,635,887

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER WITH UNPRIMED ADHESION

Keith E. Polmanteer, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,940

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G 9 Claims

A mixture of an uncured room temperature vulcanizable silicone rubber and an organosilicon compound having an organic radical with a —COOH group and a silicon-bonded hydrolyzable group gives a silicone rubber with improved unprimed adhesion to a variety of substrates when cured. An example of the organosilicon compound is an organosilane of the formula

$$(CH_3O)_3Si(CH_2)_3S(CH_2)_2COOH$$

3,635,888

POLYMER DERIVED FROM DIALKYL SUCCINYL-SUCCINATES AND DIAMINES

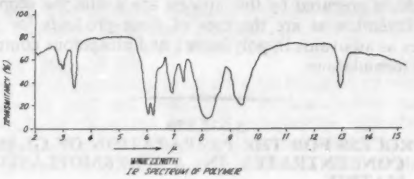
Kazuo Adachi, Akira Tai, and Fukuji Higashi, Tokyo, Japan, assignors to Tekkosha Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1970, Ser. No. 11,667

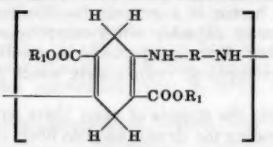
Claims priority, application Japan, Feb. 19, 1969, 44/11,825

Int. Cl. C08g *17/02*, *33/06*

U.S. Cl. 260—47 CP 5 Claims



A polymer, which is obtained by the reaction between dialkyl succinylsuccinate and diamine of the formula $NH_2—R—NH_2$ in the presence of solvents, is a new compound having recurring structural units of the formula



and is characterized by spectroscopic absorption I.R. spectra at the vicinities of 3.10, 6.01, 6.20 and 8.20μ and of NMR at δ3.13 and 8.70 p.p.m.

The polymer is conveniently employed as a coating for metal goods which are made of copper, iron, aluminum or the like, and as adhesive materials, and is able to be cast into films and sheets.

3,635,889

ADHESION PROMOTING DENTAL MATERIALS

Rafael L. Bowen, Gaithersburg, Md., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

No Drawing. Filed Feb. 18, 1970, Ser. No. 12,423

Int. Cl. C08f *7/02*; A61k *5/00*

U.S. Cl. 260—47 U 7 Claims

Polymerizable liquid condensation products that are also surface-active can be used for dental materials as primers or as monomers to mediate adhesive bonding between particulate fillers and between polymerizing formulations and surfaces such as tooth structure. Preferred the acid-catalyzed condensation products are (I) 2-methacryloxyethyl vanillate, (II) 2 - methacryloxyethyl-p-hydroxybenzoate, and (III) 2-methacryloxyethyl gallate.

When surfaces of extracted teeth were wetted with the minimal amount of viscous liquid (I) and a hardening dimethacrylate composite material was applied, the average tensile bond strength was significantly raised (from 18 to 30 kg. f./cm.^{2}).

The mechanism appears to be that the electron-withdrawing effect of the carboxylate group in the aforementioned compounds and in other similar compounds encompassed in the scope of this invention deactivates the phenolic hydroxyl group toward degradative chain transfer with free radicals to the extent that the compounds homopolymerize and copolymerize rapidly when initiated with an amineperoxide system or with other free radical generating initiator systems. In contrast with eugenol, when product (I) containing 0.6% of N,N-dimethyl-symm-xylidine was mixed with zinc oxide powder containing 1.0% benzoyl peroxide, it hardened in about 4 minutes and had an average diametral tensile strength of 154 kg. f./cm.^{2} and an average compressive strength of 1180 kg. f./cm.^{2}.

3,635,890

STABILIZATION OF POLYPHENYLENE OXIDES

Toshio Takemura, Kyoto, Isamu Nakagawa, Osaka, and Seizo Nakashio, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 781,978, Dec. 6, 1968. This application Sept. 8, 1970, Ser. No. 70,577

Int. Cl. C08g *23/20*

U.S. Cl. 260—47 ET 20 Claims

Polyphenylene oxides are stabilized to thermal oxidation by reacting the polymers with a halogenated phosphorus compound in the presence or absence of a basic compound.

3,635,891

INTERNALLY PLASTICIZED POLYIDENE RESINS

Hyman R. Lubowitz, Hawthorne, and Eugene A. Burns, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Continuation-in-part of application Ser. No. 565,074, July 14, 1966. This application Nov. 13, 1969, Ser. No. 876,580

Int. Cl. C08g *22/08*

U.S. Cl. 260—47 EP 18 Claims

Thermosetting polydiene resins may be modified by the inclusion of plasticizers to produce more versatile resins having widely variant properties. Thermosetting 1,2-polybutadiene or 3,4-polyisoprene resins may be modified by the inclusion of an organic compound having at least one reactive vinyl group.

3,635,892

THERMOSTABLE HETEROCYCLIC POLYMERS CONSISTING OF POLY 2-QUINOXALINONES AND SIMILAR CYCLIC COMPOUNDS AND THEIR PROCESS OF MANUFACTURE

Guy Rabilloud, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, Hauts-de-Seine, France

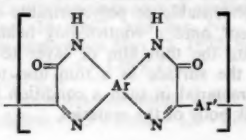
Filed Sept. 24, 1969, Ser. No. 860,498

Claims priority, application France, Sept. 25, 1968, 167,608

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 CP 18 Claims

There are provided thermostable heterocyclic polymers consisting essentially of recurring units of the formula



wherein Ar and Ar' are aromatic radicals of 4–40 carbon atoms. The polymers are produced by reacting an aromatic tetra-amine with an arylene-diglyoxylic compound of the formula

$$RO_2—CO—Ar'—CO—CO_2R$$

wherein R is hydrogen, alkyl or aryl and said polymers are useful in the preparation of adhesive, sponges, cellular structures, molded materials and composite materials.

3,635,893

WATER-SOLUBLE SULFONIUM DERIVATIVES OF DIPHENYL ETHER

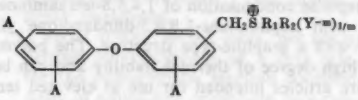
Melvin J. Hatch, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application May 26, 1966, Ser. No. 553,046, now Patent No. 3,502,910, dated Mar. 24, 1970, which is a continuation-in-part of application Ser. No. 322,057, Nov. 7, 1963. Divided and this application Aug. 27, 1969, Ser. No. 870,843

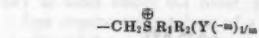
Int. Cl. C08g *17/003, 17/08*

U.S. Cl. 260—47 C 5 Claims

Polyester films useful as surface coatings are prepared from an aqueous solution of a water-soluble diphenyl ether sulfonium salt of Formula I:



where each A is –H or



and Y is a C_2–C_{10} polycarboxylic acid anion, by thermally drying the solution to convert the sulfonium salt into a polyester.

3,635,894

CURABLE EPOXY RESIN COMPOSITIONS CONTAINING ORGANOIMIDAZOLIUM SALT

Rostyslaw Dowbenko and Carl C. Anderson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,721

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 10 Claims

Storage-stable, curable epoxy resin compositions comprise a mixture of an epoxy resin and an organoimidazolium salt. Preferably, the composition includes a nitrogenous compound, such as urea, dicyandiamide, melamines or thioureas. These compositions are storage-stable in the uncured state for long periods of time at room temperature, but can be easily cured at elevated temperatures to provide products having excellent sheer strength, peel strength and other properties. These epoxy resin compositions can be used as coatings, adhesives, potting compounds, in castings and laminates, and for similar purposes.

3,635,895

PROCESS FOR PREPARING THERMOPLASTIC POLYCARBONATES

Morton Kramer, Delmar, N.Y., assignor to General Electric Company

No Drawing. Original application Sept. 1, 1965, Ser. No. 484,445, now Patent No. 3,525,712, dated Aug. 25, 1970. Divided and this application Oct. 31, 1969, Ser. No. 873,134

The portion of the term of the patent subsequent to Aug. 25, 1987, has been disclaimed

Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA 5 Claims

A process for preparing a thermoplastic randomly branched polycarbonate composition which comprises re-

acting in an organic solvent a dihydric phenol and a carbonate precursor, which reaction is carried out in the presence of 0.1 to about 2 mole percent of a finely divided polyfunctional organic compound, 50 weight percent of which has a particle size of less than 100 microns and wherein the organic solvent has suspended therein an inorganic acid acceptor. The polyfunctional organic compound is one which may be either phloroglucinol, 2,4-dihydroxy-benzoic acid, trimesic acid, 4,4-bis(3-isopropyl-4-carboxyphenyl) hexanol, 3,5-dihydroxythiophenol, melamine or triethanolamine.

3,635,896

POLYMER WITH GRAPHITE-TYPE STRUCTURE PREPARED FROM TETRAAMINOANTHRAQUINONE AND NAPHTHALENE - 1,8,4,5-DIINDANDIONE

Carl S. Marvel, Tucson, Ariz., William Bracke, Brussels, Belgium, and Prabir K. Dutt, Tucson, Ariz., assignors to Research Corporation, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,612

Int. Cl. C08g *15/00*

U.S. Cl. 260—65 **2 Claims**

The stepwise condensation of 1,4,5,8-tetraaminoanthraquinone with naphthalene-1,8,4,5-diindandione yields a polymer with a graphite-type structure. The polymer exhibits a high degree of thermal stability and can be used to prepare articles intended for use at elevated temperatures.

3,635,897

UNSATURATED NITRILE-MODIFIED AROMATIC HYDROCARBON-FORMALDEHYDE RESINS

Teiichi Tanigaki, Matsuyama-shi, Japan, assignor to Japan Gas Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed June 24, 1969, Ser. No. 836,151

Claims priority, application Japan, Dec. 28, 1968, 44/95,961

Int. Cl. C08g *7/00, 13/00, 20/28*

U.S. Cl. 260—67 A **13 Claims**

Ethylenically unsaturated nitrile-modified aromatic hydrocarbon-formaldehyde resins which contain in the molecular structure an amide linkage, a reactive unsaturated group and at least one functional group selected from a methylene linkage, a di-methylene ether linkage, an acetal linkage and a methylol group are produced by effecting the ternary addition-condensation of aromatic hydrocarbon, formaldehyde and ethylenically unsaturated nitrile in an aqueous medium at an elevated temperature not exceeding 100° C. for a period of 1 to 10 hours in the presence of an acid catalyst. The resultant resins are extremely reactive and useful in paints, adhesives, rubber reinforcing materials, molding materials, laminated materials and sizing agents for papers to give them water resistance, chemical resistance, electric-insulation resistance, weathering resistance and improved mechanical characteristics.

3,635,898

PROCESS FOR POLYMERIZATION OF ACROLEIN

Donald H. Lorenz, Basking Ridge, N.J., and David I. Randall and Joseph P. Copes, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed July 3, 1969, Ser. No. 839,058

Int. Cl. C08f *3/40*

U.S. Cl. 260—67 UA **5 Claims**

Polymerization of acrolein in presence of 0.5 to 9% by weight based on the total reaction mixture—of sodium sulfate in aqueous solution with a persulfate or other free radical yielding polymerization catalyst.

3,635,899

POLYESTERIFICATION OF 1,4- AND 1,5-DIOLS

Marvin L. Doerr and Luis R. Vizurraga, Charlotte, N.C., assignors to Fiber Industries, Inc.

No Drawing. Filed Sept. 4, 1969, Ser. No. 855,402

Int. Cl. C08g *17/01*

U.S. Cl. 260—75 M **5 Claims**

There is provided a novel process for the production of a polyester wherein the production of undesired cyclic by-products is minimized. In said process a mixture comprised of at least one 1,4- or 1,5-diol and a dicarboxylic-acid ester is subjected to a temperature of about 140 to about 230 degrees centigrade and a vacuum of from about 15 to about 760 millimeters of mercury absolute for from about 30 to about 200 minutes, a vacuum of less than about 15 millimeters of mercury is then slowly imposed upon it, and thereafter the temperature of the mixture is raised to from about 230 to about 300 degrees centigrade; and the mixture is maintained under these temperature and pressure conditions until a polymer with the desired relative viscosity is formed.

This process minimizes the amount of cyclic by-products produced.

3,635,900

POLYESTER CONDENSATION PROCESS USING ALKALI METAL GERMANATES

John A. Price, Swarthmore, and Mary J. Stewart, Riddlewood, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1969, Ser. No. 871,948

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **8 Claims**

Process of preparing saturated linear polyester resins comprising carrying out an ester-interchange reaction between a lower alkylene glycol and a lower alkyl diester of a saturated aromatic dicarboxylic acid or carrying out a direct esterification reaction between a lower alkylene glycol and a saturated aromatic dicarboxylic acid and polycondensing the reaction product thereof in the presence of an alkali metal germanate as a polycondensation catalyst.

3,635,901

PROCESS AND APPARATUS FOR CONTINUOUSLY POLYCONDENSING OR POLYMERIZING MONOMERS

Federico Urgesi, Vercelli, Italy, and Horst Rothert, Berlin, Germany, assignors to Chatillon Societa Anonima Italiana per le Fibere Tessili Artificiali S.p.A., Milan, Italy, and Karl Fischer Apparate-u Rohrleitungsbau, Berlin, Germany

Continuation of application Ser. No. 519,836, Jan. 11, 1966. This application July 23, 1969, Ser. No. 869,416

Claims priority, application Italy, Jan. 15, 1965, 814/65

Int. Cl. C08g *17/01, 20/12*

U.S. Cl. 260—75 M **4 Claims**

There is provided a process for continuously producing macromolecular products useful in the manufacture of fibers and films by polycondensation or polymerization of monomers, and characterized by distributing a thin film of polycondensable or polymerizable material from a supply thereof onto a controllably heated cylindrical surface, causing the thin film or layer to move downwardly along the surface as a thin film to a discharge zone, i.e. the material in such a condition is out of contact with a bulk body of the material.

3,635,902
PRODUCTS

Robert G. Thompson, Signal Mountain, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

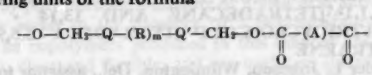
No Drawing. Division of application Ser. No. 509,245, Oct. 18, 1965, now Patent No. 3,492,272, which is a division of application Ser. No. 264,783, Mar. 13, 1963, now Patent No. 3,467,719, which in turn is a continuation-in-part of application Ser. No. 187,982, Apr. 16, 1962. Divided and this application Dec. 29, 1969, Ser. No. 888,935

The portion of the term of the patent subsequent to Jan. 27, 1987, has been disclaimed

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R **3 Claims**

The application discloses a class of glycols containing two hydroxycyclohexyl groups, and linear condensation polyesters prepared therefrom which are characterized by recurring units of the formula



wherein *m* is 0 or 1, Q and Q' are 1,3- or 1,4-cyclohexylene or alkyl derivatives thereof, R is an alkylene radical, and A is a divalent saturated hydrocarbon radical containing a 6-membered carbocyclic nuclei. Polyesters particularly suitable for textile fibers are illustrated.

3,635,903
CURING SYSTEM FOR POLYMERIC RUBBER MATERIALS

James E. Kearnan, Yorktown Heights, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 680,000, Nov. 2, 1967. This application Oct. 15, 1969, Ser. No. 866,741

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 B **6 Claims**

A vulcanized product obtained by heating a rubber-like alpha olefin copolymer in the presence of a curing agent comprising a blend of a tetraalkylthiuram sulfide and a N,N'-polythio-bis-dialkyl amine.

3,635,904
PROCESS FOR MANUFACTURE OF RIGID NONCELLULAR POLYURETHANE

Peter James Briggs and William Raymond Clegg, Manchester, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England

No Drawing. Filed Jan. 8, 1970, Ser. No. 1,539

Claims priority, application Great Britain, Jan. 9, 1969, 1,323/69

Int. Cl. C08g *22/04*

U.S. Cl. 260—77.5 AA **3 Claims**

A process for manufacture of shaped polyurethane articles which comprises forming an anhydrous reaction mixture of one or more organic polyisocyanates and one or more organic polyols such as will provide a rigid polyurethane on curing, allowing the mixture to cure to a gelled state and subjecting the mixture to a fabrication step prior to the mixture reaching a fully cured state.

3,635,905
CYANIDE ION AS CATALYST FOR HETEROCYCLIC POLYMERS

Tad L. Patton, Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of applications Ser. No. 685,281, Nov. 24, 1967, and Ser. No. 796,221, Feb. 3, 1969. This application May 22, 1970, Ser. No. 41,656

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 R **53 Claims**

Heterocyclic polymers containing either or both 4-imino1,3-imidazolidine - 2,5 - dione - 1,3 - diyl rings and/or 5 - imino - 1,3 - imidazolidine - 2,4 - dione - 1, 3 - diyl rings are produced in the presence of an added cyanide ion by the reaction of diisocyanates with hydrogen cyanide, by the reaction of dicyanoformamides with diisocyanates and by the polymerization of cyanoformamidyl isocyanates. The presence of the added cyanide ion produces heterocyclic polymers with substantially no crosslinking through the imino group of the imidazolidine rings.

3,635,906
PREPARATION OF POLYURETHANES USING ORGANO-TIN CATALYST AND TIME-LAPSE MODIFIER

Madhusudan D. Jayawant, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,190

Int. Cl. C08g *22/34, 22/18;* **B01j** *11/82*

U.S. Cl. 260—77.5 AC **15 Claims**

Method of preparing polyurethanes by time-lapse catalysis which comprises:

(A) thoroughly mixing a reaction medium containing:
  (1) an organic polyisocyanate,
  (2) about 0.5–1.5 equivalent, per equivalent of organic polyisocyanate, of an organic polyhydroxy compound,
  (3) about 0.0001 to 0.1 mole, per equivalent of organic polyisocyanate, of a cure rate catalyst for the polyurethane reaction consisting essentially of amine-free organo-tin cure rate catalyst for the polyurethane reaction,
  (4) at least about 0.1 mole, per mole of amine-free organo-tin catalyst, of a time-lapse modifier selected from the group consisting of
    (a) β-dicarbonyl compounds having an enol content of at least about 4% and a dicarbonyl angle of not greater than about 120 degrees,
    (b) α-hydroxy ketones,
    (c) fused aromatic β-hydroxy ketones in which the hydroxyl group is attached to a carbon beta to the keto group in an adjacent ring, and
    (d) β-hydroxy nitrogen - heterocyclic fused aromatics in which the hydroxyl group is attached to a carbon beta to the nitrogen in an adjacent ring,
(B) applying the reaction mixture, and
(C) allowing the applied reaction mixture to cure at ambient temperature.

3,635,907
PROCESS FOR THE PRODUCTION OF POLYURETHANES

Helmut Schu'ze, Erlenbach, and Martin Pfistermeister, Oberbruch Germany, assignors to Glanzstoff AG, Wuppertz Germany

No Drav.. ;. Filed July 9, 1969, Ser. No. 840,516

Claims priority, application Germany, July 13, 1968, P 17 70 884.8

Int. Cl. C08g *22/04, 22/06*

U.S. Cl. 260—77.5 AM **9 Claims**

Process for producing polyurethanes in which a macrodiol is reacted with a diisocyanate containing at least one aromatic radical to form a pre-adduct; the pre-adduct is reacted with chain extenders; diphenylmethane-4,4'-diisocyanates and a diol are added to the reaction mixture; and the reaction is stopped after the polyurethane has reached a given viscosity by the addition of a monoalcohol. The process produces polyurethanes having outstanding properties.

3,635,908

PROCESS OF PREPARING POLYURETHANE-UREA THERMOPLASTIC PRODUCTS BASED ON A POLYAMINE CARBAMATE AS CHAIN EXTENDER

Herwart C. Vogt, Grosse Ile, and George Roley, Trenton, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation of application Ser. No. 661,818, Aug. 21, 1967. This application Nov. 10, 1969, Ser. No. 875,519

Int. Cl. C08g *22/16, 53/16*

U.S. Cl. 260—77.5 AA 4 Claims

The subject matter of the present application relates to polyurethane- urea compositions. As disclosed herein, the polyurethane-urea compositions are prepared by heating a composition which comprises (a) polyamine carbamate and either (b) organic polyisocyanate and (c) organic compound containing at least two active hydroxyl groups or (d) isocyanate-terminated intermediate prepared by the reaction of (b) and (c). The polyamine carbamate employed in these compositions acts as a chain-extending agent and may act as a foaming or blowing agent, thereby providing for unitary compositions for preparation of polyurethane-ureas which are stable at room temperature.

3,635,909

METHOD FOR POLYMERIZING α-AMINO ACID N - CARBOXYANHYDRIDES USING ALKALI METAL SALTS OF 2-PYRROLIDONE

Yasuo Fujimoto, Keizo Tatsukawa, and Toru Doiuchi, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed June 2, 1970, Ser. No. 42,853

Claims priority, application Japan, June 18, 1969, 44/47,651

Int. Cl. C08g *20/08*

U.S. Cl. 260—78 A 14 Claims

The polymerization of α-amino acid N-carboxyanhydrides is carried out in the presence of an alkali metal salt of 2-pyrrolidone or derivatives thereof to produce amino acid polymers.

3,635,910

POLYAMIDES CONTAINING PHOSPHONAMIDE

Stanley Albert Sills and Hugh Foster, Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 5, 1969, Ser. No. 822,012

Claims priority, application Great Britain, May 14, 1968, 22,885/68

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 R 9 Claims

A polyamide derived from a dicarboxylic acid and a diamine, a lactam or aminocarboxylic acid or polyamide forming derivative thereof and containing at least 25 parts per million (expressed as phosphorus) of a phosphonamide having the formula:

where R is aliphatic, cycloaliphatic, aromatic or $—NR_5R_6$; R_1, R_2, R_3, R_4, and R_5 are H, aliphatic, cycloaliphatic, aromatic or form part of a heterocyclic group in which the nitrogen also forms part of the heterocyclic structure, and R_6 is aliphatic, cycloaliphatic, aromatic or forms part of a heterocyclic group in which the nitrogen also forms part of heterocyclic structure. The thus modified polyamide gives fibers which show increased dye-uptake together with improved elastic recovery and initial modulus after treatment with boiling water.

3,635,911

POLYAMIDES HAVING ENHANCED RESISTANCE TO LIGHT DEGRADATION

Gene C. Weedon, Richmond, Va., and Robin B. Mumford, Middletown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 14, 1969, Ser. No. 824,697

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 R 6 Claims

Acid dyeable polyamide filaments having enhanced resistance to light degradation are prepared by polymerizing the polyamide-forming materials in the presence of at least 10 equivalents per 10^6 gms. of polymer of p-toluenesulfonic acid and less than about 90 equivalents per 10^6 gms. of a primary diamine such as m-xylylenediamine.

3,635,912

POLYAMIDES FROM 13,14 - DIAZATRICYCLO [6,4.1.1^{2,7}]TETRADECANE AND 13,14 - DIAZATRICYCLO[6.4.1.1^{2,7}]TETRADECA - 3,5,9,11-TETRAENE

Alexander L. Johnson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Feb. 25, 1966, Ser. No. 529,961, now Patent No. 3,475,433. Divided and this application June 27, 1969, Ser. No. 837,348

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 6 Claims

Film and fiber forming polyamides from 13,14-diazatricyclo[6.4.1.1^{2,7}]tetradecane and 13,14 - diazatricyclo-[6.4.1.1^{2,7}]tetradeca-3,5,9,11-tetraene.

3,635,913

PREPARATION OF POLYAMIDES WITH ALKALINE CATALYSTS

Karl Heinz Hermann, Krefeld-Bochum, and Hermann Schnell, Krefeld-Urdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft

No Drawing. Continuation-in-part of abandoned application Ser. No. 444,399, Mar. 31, 1965. This application Oct. 23, 1969, Ser. No. 868,890

Claims priority, application Germany, Apr. 3, 1964, F 42,504

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L 4 Claims

Process for preparing polyamides comprising polymerizing an anhydrous lactam in the presence of a catalytic amount of an alkali metal—or alkaline earth metal—C-alkyl lactam, C-cyclo-alkyl lactam, aralkyl lactam or aryl lactam at a temperature of about 100° C., preferably in the presence of an accelerator selected from the group of organic isocyanates, carbodiimides, cyanamides, N - acyl - lactams, and N - diacyl - amines. The catalyst is preferably initially dissolved in an inert organic solvent and then added to the polymerization system.

3,635,914

REACTIVE HYDROXYL GROUP-CONTAINING VINYL CHLORIDE TERPOLYMERS

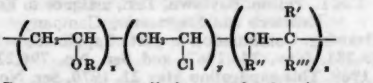
Wiley E. Daniels, Allentown, and Nathan D. Field, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 24, 1969, Ser. No. 888,025

Int. Cl. C08f *15/40*

U.S. Cl. 260—78.5 CIH 4 Claims

Reactive hydroxyl group-containing vinyl chloride terpolymers having the following formula:



wherein R represents an alkyl group having from 1 to 18 carbon atoms, R′ represents hydrogen or methyl, R″ represents hydrogen, hydroxyalkyl or hydroxyalkyl carbalkoxy, and R‴ represents hydroxy, hydroxyalkyl or

hydroxyalkyl carbalkoxy, *x* represents from about 50 to about 98 mole percent, *y* represents from about 1 to about 40 mole percent and *z* represents from about 1 to about 10 mole percent. The method of preparing the novel terpolymers by copolymerizing vinyl chloride, an alkyl vinyl ether and a polymerizable hydroxyl group-containing monomer in the presence of a free radical catalyst is also disclosed.

3,635,915

COPOLYMERS OF MALEIC ACID AND ACRYLIC ACID

Donald J. Gale, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,972
Int. Cl. C08f *15/36*
U.S. Cl. 260—78.5 R **10 Claims**

Copolymers of maleic acid and acrylic acid are prepared by polymerizing a mixture of maleic acid and acrylic acid in water in the presence of a polymerization catalyst. The copolymers produced in this manner are water-soluble, clear and flexible, and are useful as surface coatings. The copolymers are particularly useful as textile sizing compositions for fibers and yarns.

3,635,916

COPOLYMERS OF HALFESTERS OF MALEIC ANHYDRIDE AND 2-ALKOXYPROPENE

Peter Schlumbom, Irvington, and David A. Gordon, Scarsdale, N.Y., assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,832
Int. Cl. C08f *27/12*
U.S. Cl. 260—78.5 T **11 Claims**

Alkylene oxide monoether halfesters of maleic anhydride/2-alkoxypropene copolymers and alkyl and alkylene oxide mixed halfesters of said copolymers are homogenous film-forming compositions useful in hair spray preparations. There halfesters are prepared by the esterification of the maleic anhydride/2-alkoxypropene copolymer with an appropriate alcohol.

3,635,917

METHOD OF PRODUCING HIGHLY CONCENTRATED ACRYLONITRILE POLYMER AND COPOLYMER SOLUTIONS

Eberhard W. Roth, Hans-Joachim H. G. Kröning, and Eberhard P. H. Peter, Premnitz, Germany, assignor to Veb Chemiefaserwerk Friedrich Engels, Premnitz, Germany

No Drawing. Filed Dec. 19, 1969, Ser. No. 886,733
Int. Cl. C08f *3/76, 15/38*
U.S. Cl. 260—79.3 M **3 Claims**

A solution prepared by polymerizing acrylonitrile alone or with at least one comonomer in a solvent is concentrated and demonomerized by evaporation in two stages,, the first stage being at a pressure of at least 50 torr and the second stage being at a pressure of no greater than 40 torr.

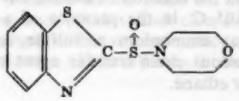
3,635,918

2-MORPHOLINOSULFINYLBENZOTHIAZOLES

Alfred Bay Sullivan and Robert Henry Campbell, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application June 1, 1967, Ser. No. 642,712, now Patent No. 3,454,590. Divided and this application Nov. 14, 1969, Ser. No. 871,319
Int. Cl. C08f *27/06*
U.S. Cl. 260—79.5 B **3 Claims**

The disclosure is new compounds such as 2-morpholinosulfinylbenzothiazole of the formula



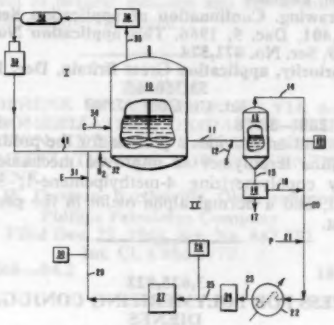
The componds are prepared by the action on the corresponding 2-morpholinothiobenzothiazole of an aqueous solution of an alkali metal hypohalite. The new compounds are useful accelerators for the vulcanization of rubber.

3,635,919

PREPARATION OF ETHYLENE/PROPYLENE COPOLYMER

Edward Peter Goffinet, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 30, 1969, Ser. No. 846,006
Int. Cl. C08f *15/04*
U.S. Cl. 260—80.78 **5 Claims**



Process for producing an ethylene/propylene copolymer having a predetermined composition on a continuous basis by recycling reactants of the reaction mixture in two separate streams, a first stream formed from the vapor phase of the reaction mixture and comprising largely monomers; and a second stream comprising liquid phase of the reaction mixture free from polymer product, analyzing the second stream for monomer concentrations and regulating the flow of fresh monomers to the reactor to maintain constant monomer concentrations in the liquid phase; compressing, cooling and purifying the first stream and recycling the cooled monomers therein to the reactor.

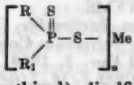
3,635,920

METAL PHOSPHINODITHIOATES AND BIS(PHOSPHINOTHIOYL) DISULFIDES AS VULCANIZATION ACCELERATORS

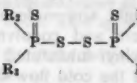
David Apotheker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 21, 1969, Ser. No. 826,680
Int. Cl. C08f *27/06*
U.S. Cl. 260—79.5 B **12 Claims**

Vulcanization of copolymers of at least one α-olefin with a nonconjugated diene having no more than one polymerizable double bond is accelerated by metal phosphinodithioates of the formula



and by bis(phosphinothioyl) disulfides of the formula



wherein each R_1, R_2, R_3, R_4, and R_5 can be phenyl, lower alkylphenyl, halophenyl, naphthyl, halonaphthyl,

aralkyl and alkyl containing 1–20 carbon atoms, or cycloalkyl containing 5–6 ring carbon atoms; Me is zinc, copper, cadmium or iron; and *n* is the valence of the metal. These vulcanization accelerators are particularly suitable for rapid, high-temperature cures because "reversion" of tensile properties, usually occurring at high temperatures, is here considerably reduced.

3,635,921

CRYSTALLINE TERPOLYMERS OF 4-METHYL-PENTENE, 3 - METHYLPENTENE AND AN ALPHA OLEFIN

James Keith Hambling, Frimley, near Aldershot, and David Allison Woodhead, Shepperton, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Continuation of application Ser. No. 600,401, Dec. 9, 1966. This application Nov. 17, 1969, Ser. No. 871,574

Claims priority, application Great Britain, Dec. 16, 1965, 53,350/65

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **5 Claims**

This invention provides a process for the production of a crystalline terpolymer of improved mechanical properties by copolymerizing 4-methylpentene-1, 3-methylpentene-1, and a normal alpha olefin in the presence of a catalyst.

3,635,922

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Tai Chun Cheng, Akron, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,879

Int. Cl. C08d *1/32;* **C08f** *1/28*

U.S. Cl. 260—83.7 R **23 Claims**

Conjugated dienes are polymerized by a new catalyst system which is more economically and more easily prepared and used than present catalyst systems used for similar purpose. This catalyst system comprises a combination of a free radical anion component modified by an alkali metal halide. The free radical anionic component is made, in an appropriate solvent, from an alkali metal and an anion forming compound such as naphthalene. The alkali metal halide is preferably potassium chloride, bromide or iodide, but can also be other alkali metal halides. The catalyst system is used to polymerize conjugated dienes to polymer products of controlled molecular weight, suitable for easy processing and having properties desirable for ultimate use in tires and other molded products. The molecular weights of the products are increased by virtue of the modifier as compared to the molecular weights obtained with the radical anion component alone.

3,635,923

PROCESS FOR ADDING SULFITE ESTERS TO ORGANO-ALKALI METAL CATALYZED POLYMERIZATION SYSTEMS

Charles M. Selman, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 5, 1969, Ser. No. 882,705

Int. Cl. C08f *1/28, 7/04, 15/04*

U.S. Cl. 260—84.3 **9 Claims**

The molecular weight and molecular weight distribution of homopolymers and copolymers of conjugated dienes and/or monovinyl-substituted aromatic hydrocarbons is increased and the cold flow of rubbery polymers of said monomers is decreased by employment of sulfite ester treating agents.

3,635,924

ALTERNATING COPOLYMERS OF UNSATURATED HALOGENATED HYDROCARBONS AND ACRYLONITRILE OR ACRYLIC COMPOUND

Kohei Nakaguchi, Shohachi Kawasumi, Masaaki Hirooka, and Hiroshi Yabuuchi, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation of application Ser. No. 480,139, Aug. 16, 1965. This application Oct. 21, 1969, Ser. No. 868,243

Claims priority, application Japan, Aug. 18, 1964, 39/47,354

Int. Cl. C08f *15/24, 15/32*

U.S. Cl. 260—85.5 XA **26 Claims**

Alternating copolymers of acrylonitrile or an acrylic compound and terminally ethylenically unsaturated halogenated hydrocarbon are produced by reacting an unsaturated halogenated hydrocarbon monomer, such as vinyl chloride, vinylidene chloride, allyl chloride or p-iodostyrene, with a conjugated vinyl compound, such as methyl acrylate, n-butyl acrylate, N-ethyl acrylamide, methyl thiolacrylate and acrylonitrile, in the presence of an organoaluminum compound, such as ethylaluminum, sesquichloride, ethylaluminum dichloride, methylaluminium sesquibromide and trialkylaluminum. The reaction may be carried out over a wide range of temperatures (−150° C. to +100° C.) but lower temperatures are preferred. The products in general are characterized by a substantially 1:1 molar ratio of the starting polymers, a high molecular weight and an intrinsic viscosity within the range of from 0.1 to 10.

3,635,925

POLYMERIZATION OF VINYL CHLORIDE IN BULK AND AT LOW TEMPERATURES

Sergio Lo Monaco, Vincenza, Carrado Mazzolini, Mestre-Venice, and Luigi Patron and Alberto Moretti, Venice, Italy, assignors to Chatillon Societa Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 671,216, Sept. 28, 1967. This application Dec. 15, 1969, Ser. No. 885,293

Claims priority, application Italy, Dec. 16, 1968, 25,161/68

Int. Cl. C08f *1/62, 3/30*

U.S. Cl. 260—85.5 **15 Claims**

Vinyl chloride is polymerized in bulk and at low temperatures utilizing a polymerization catalyst comprised of an organic hydroperoxide, sulphur dioxide and an alcoholate of a Group I metal of the Periodic Table, said alcoholate having from 1 to 6 carbon atoms, and said alcoholate and sulphur dioxide being present in a molar ratio of at least 2.

3,635,926

AQUEOUS PROCESS FOR MAKING IMPROVED TETRAFLUOROETHYLENE / FLUOROALKYL PERFLUOROVINYL ETHER COPOLYMERS

William Franklin Gresham, Wilmington, Del., and Alfons Franz Vogelpohl, Washington, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,871

Int. Cl. C08f *15/06, 3/24*

U.S. Cl. 260—87.5 A **6 Claims**

Tough, stable copolymers of tetrafluoroethylene monomer and fluorovinyl ether monomers can be produced by aqueous polymerization of the monomers by a process that requires that the reaction be carried out at from about 50 to about 110° C. in the presence of a water-soluble initiator such as ammonium persulfate, an emulsifying agent and a gaseous chain transfer agent such as hydrogen, methane or ethane.

3,635,927

POLYMERIZATION PROCESSES USING A 3-COMPONENT INITIATOR SYSTEM

Richard Johnston, Reading, England, assignor to The Gillette Company, Boston, Mass.

No Drawing. Filed Jan. 28, 1969, Ser. No. 794,796
Claims priority, application Great Britain, Feb. 12, 1968, 6,838/68
Int. Cl. C08f 3/76, 3/90, 7/04
U.S. Cl. 260—88.7 8 Claims

This invention is concerned with initiation systems for the polymerization of ethylenically unsaturated monomers in aqueous media. Generally, the initiation system comprises (1) a water-soluble ferrous or ferric salt, (2) a water- soluble peroxide or persalt, and (3) a water-soluble organic compound which is capable of forming a complex with ferrous or ferric ions and does not exhibit substantial degradative transfer activity in the polymerization reaction.

3,635,928

MANUFACTURE OF POLYVINYL CHLORIDE

Jean Claude Thomas, Lyon, Rhone, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Paris, France

No Drawing. Filed Apr. 26, 1966, Ser. No. 545,304
Claims priority, application France, Apr. 30, 1965, 15,363
Int. Cl. C08f 45/00, 29/18
U.S. Cl. 260—92.8 9 Claims

Prior practice of making homogeneous resins of vinyl chloride containing adjuvants such as stabilizers, plasticizers, lubricants, fillers and antioxidants has involved intense mechanical working, for instance on a roll mill, and has proved to be difficult of satisfactory execution. Frequently such processes produced products possessed of potential instability, introduced by the heat of the mixing operation, which appeared during later operations on the resin. Lack of homogeneity was also known, producing inferior products. The present process of preparing finely divided polymers in powders and granular forms accomplishes the loading and homogenization of the particles with their working adjuvants by bringing an organic carrier liquid containing the adjuvants in solution or suspension into contact with the pulverulent, solid polymer to be loaded, with agitation which accomplishes a thorough mixing of the two phases and the transfer of the adjuvants from the liquid to the polymer. The transfer is seemingly accomplished by sorption, and is substantially complete, but the applicant is not bound by any theory of transfer. After the transfer has been accomplished the carrier liquid is evaporated off and reused.

3,635,929

PROCESS FOR THE HALOGENATION OF VINYL POLYMERS

Giorgio Gatta, Mestre, and Roberto Rettore, Treviso, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation of application Ser. No. 566,231, July 19, 1966. This application Nov. 3, 1969, Ser. No. 871,558
Claims priority, application Italy, July 21, 1965, 7,188/65; Mar. 22, 1966, 15,807/66
Int. Cl. C08f 3/30, 27/02
U.S. Cl. 260—92.8 3 Claims

A process for making a polymeric material in which chemically combined vinyl-chloride polymer is chlorinated in a suspending medium containing a chlorofluoro-alkane in addition to a chloro-alkane from the class of chlorofluoro-methanes and ethanes and chloro-methanes and ethanes respectively. The volume ratio of the chlorofluoro-alkane to the chloro-alkane is less than about 10.

3,635,930

CARBON DISULFIDE WITH TRIALKYL PHOSPHINE AS ADJUVANT FOR POLYMERIZATION CATALYST AND POLYMERIZATION PROCESS

Lawrence M. Fodor, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,198
Int. Cl. C08f 1/56, 3/10
U.S. Cl. 260—93.7 6 Claims

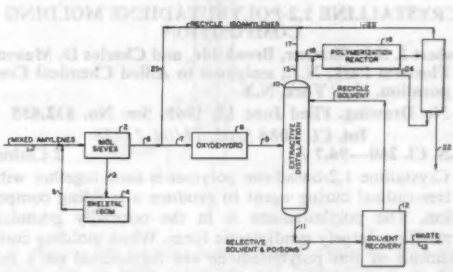
Carbon disulfide alone or with an alkyl phosphine, e.g. tributyl phosphine complex, is used as adjuvant for titanium trichloride-aluminum chloride-organoaluminum or organoaluminum halide catalyst suitable for polymerization of 1-olefins, e.g., propylene. Polymers having higher than usual modulus and lower than usual xylenes-soluble content are producible with the improved catalyst at usual conditions. A synergistic effect has been discovered with respect to flexural modulus and xylene-soluble content of the polymer prepared.

3,635,931

POLYISOPRENE FROM AMYLENES VIA n-AMYLENE ISOMERIZATION, OXIDATIVE DEHYDROGENATION, EXTRACTIVE DISTILLATION, AND POLYMERIZATION OF LOW-CONCENTRATION ISOPRENE

Joseph W. Davison, Bartlesville, Okla, assignor to Phillips Petroleum Company

Filed Dec. 22, 1969, Ser. No. 887,282
Int. Cl. C08d 3/10
U.S. Cl. 260—94.2 10 Claims



A process for the production of polyisoprene from a relatively low-concentration isoprene stream obtained from a feedstock of mixed amylenes. Isoamylenes are separated from n-amlyenes by molecular sieves, isoamylenes in part dehydrogenated to isoprene, catalyst poisons removed by extractive distillation, and the isoprene contained in the stream then polymerized to synthetic rubber. The n-amylenes separated by use of the molecular sieves are skeletally isomerized to isoamylenes and recycled to the molecular sieve separation.

3,635,932

PROCESS OF SEPARATING MICROGEL FROM RUBBER POLYMERS

Norman F. Keckler, Canton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 505,043, Oct. 24, 1965. This application May 1, 1969, Ser. No. 821,153
Int. Cl. C08d 3/08, 5/00
U.S. Cl. 260—94.7 R 3 Claims

The invention relates to polymers, both (1) homopolymers of hydrocarbon conjugated-diene monomers of

4 and 5 carbon atoms and (2) copolymers of said monomers with aliphatic or aryl olefinic monomers produced by solution polymerization using a lithium-containing catalyst, with production of microgel. The microgel is separated by centrifuging a solution of the polymer product in a solvent of different density from the microgel.

3,635,933

1,2-POLYBUTADIENE MOLDING COMPOSITION

Robert J. Schaffhauser, Brookside, and Charles D. Mason, Florham Park, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 12, 1969, Ser. No. 832,852

Int. Cl. C08d *5/02, 11/04, 13/28*

U.S. Cl. 260—94.7 A **2 Claims**

1,2-butadiene polymer having at least 80% of the butadiene content combined therein in the 1,2 form is used together with a peroxy curing agent to produce a molding composition. The polybutadiene can be in a normally granular, crystalline form or in non-crystalline form. The composition cures at good rate even when antioxidant to inhibit premature curing is included in the composition. A heat distortion temperature of at least 250° C. can be obtained. Conventional ingredients of molding compounds such as fillers and mold lubricants can be incorporated with the composition. The composition can be worked without curing up to a temperature of about 150° C. and cured at higher temperatures.

3,635,934

CRYSTALLINE 1,2-POLYBUTADIENE MOLDING COMPOSITION

Robert J. Schaffhauser, Brookside, and Charles D. Mason, Florham Park, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 12, 1969, Ser. No. 832,855

Int. Cl. C08d *5/02, 11/04, 13/28*

U.S. Cl. 260—94.7 A **2 Claims**

Crystalline 1,2-butadiene polymer is used together with a free-radical curing agent to produce a molding composition. The polybutadiene is in the normally granular, crystalline, largely syndiotactic form. When molding compositions of this polybutadiene are formulated on a roll mill, the compositions are granulated. Those formulated with peroxy curing agents will readily cure to a heat distortion temperature of at least 250° C. even when containing an antioxidant serving to inhibit premature curing. Conventional ingredients of molding compounds such as fillers and mold lubricants can be incorporated with the compositions. The compositions including a peroxy curing agent and an antioxidant can be worked without curing at temperatures above the fusion temperature, and cured at higher temperatures.

3,635,935

POLYMERIZATION OF ETHYLENE WITH SUPPORTED HYDROCARBON TITANIUM ACTIVATED WITH ALKYLALUMINUM

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,356

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—94.9 **5 Claims**

Ethylene is polymerized at a high rate and with high catalyst mileage by using as the catalyst a tetra(aralkyl) titanium, such as tetrabenzyltitanium, extended on a silica support and activated with an organoaluminum compound, preferably a dialkylaluminum chloride.

3,635,936

PRODUCTION OF HOMOPOLYMERS OF ETHYLENE USING HYDROPEROXY-ALKYLPHENYL-ALKANES AS CATALYST

Hans Gropper and Franz Mietzner, Ludwigshafen, Klaus Kinkel, Rodenkirchen, and Friedrich Urban, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,859

Claims priority, application Germany, Oct. 26, 1968, P 18 05 635.4

Int. Cl. C08f *3/04, 1/60*

U.S. Cl. 260—94.9 R **2 Claims**

A process for the production of homopolymers of ethylene by polymerization of ethylene at high pressure and elevated temperature using a mixture of a hydroperoxide and oxygen as a polymerization initiator with or without a polymerization regulator. An essential feature of the process according to the invention is the use of hydroperoxides of a specially selected class of compounds.

3,635,937

ETHYLENE POLYMERIZATION

Ronald S. Bauer, Orinda, Harold Chung, Berkeley, Peter W. Glockner, Alameda, and Wilhelm Keim, Berkeley, Calif., and Henry van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,374

Int. Cl. C08f *1/58, 3/06*

U.S. Cl. 260—94.9 C **9 Claims**

Highly linear and crystalline polyethylene is produced by contacting ethylene in the presence of a nickel chelate of a bidentate chelating ligand having a tertiary organophosphorus moiety and a carboxymethyl or carboxyethyl group attached directly to the phoshorus atom of the organophosphorus moiety, in liquid phase in a reaction diluent consisting essentially of an alkane, alkene, or mixture thereof.

3,635,938

TECHNIQUE FOR ENHANCING THE ABILITY OF POLYMER TO BOND WITH ADHESIVE AND RESULTANT POLYMER

Francis W. Ryan, Millington, and Harold Schonhorn, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

No Drawing. Original application Feb. 17, 1967, Ser. No. 616,785, now Patent No. 3,520,753. Divided and this application Dec. 19, 1969, Ser. No. 886,755

Int. Cl. C08f *29/04, 29/16;* **C08g** *20*

U.S. Cl. 260—94.9 **5 Claims**

Hydrocarbon, fluorocarbon and polyamide polymers destined for bonding with adhesives are melted upon a high energy metal or metal oxide surface, cooled and separated therefrom by dissolution of the latter. The resultant materials are capable of bonding with any conventional adhesive, yielding superior bond strengths.

3,635,939

MONOAZO DYES CONTAINING PHTHALIMIDES

Johannes Dehnert, Ludwigshafen, Walter Grosch, Mannheim, and Gerhard Gnad, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation-in-part of application Ser. No. 703,273, Feb. 6, 1968. This application May 27, 1970, Ser. No. 41,083

Claims priority, application Germany, Feb. 14, 1967, P 16 44 056.5

Int. Cl. C09b *29/30*

U.S. Cl. 260—152 **2 Claims**

Dyes containing sulfonic acid groups derived from 3-aminophthalimides, or 4-aminophthalimides, and 2-amino-8-hydroxynaphthalene-6-sulfonic acid, which are especially suitable for dyeing polyamides.

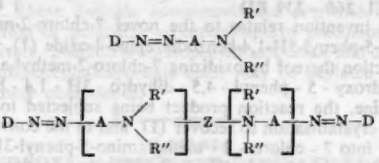
3,635,940

DISAZO DYESTUFFS CONTAINING A BRIDGING GROUP AND AT LEAST ONE QUATERNARY AMMONIUM GROUP

Gert Hegar, Schoenenbuch, Hans-Joerg Angliker, Riehen, and Richard Peter, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed May 21, 1968, Ser. No. 730,943
Claims priority, application Switzerland, May 29, 1967, 7,532/67
Int. Cl. C09b *33/06, 43/00;* D06p *1/02*
U.S. Cl. 260—155 9 Claims

Disazo compounds of the formula



in which D represents the residue of a monocyclic or bicyclic diazo component, A represents an arylene residue and R′ and R″ each represents an alkyl residue, are linked together via their coupling components through a bifunctional bridging group Z which has no dyestuff characteristics and which contains at least one quaternated nitrogen atom. The compounds are useful for dyeing and printing synthetic fibers, and produce intense and level dyeings possessing good fastness to light, washing, perspiration and sublimation.

3,635,941

DISPERSE MONO AZO DYES CONTAINING AN ACYLAMIDOTETRAHYDROQUINOLINE GROUP

Max A. Weaver, James M. Straley, and Clarence A. Coates, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,411
Int. Cl. C09d *29/36*
U.S. Cl. 260—155 10 Claims

Water-insoluble azo compounds having a 1-alkyl- or 1 - cycloalkyl-7-acylamido - 1,2,3,4 - tetrahydroquinoline coupling component and certain substituted phenyl groups as a diazo component are useful as dyes for polyester textile materials.

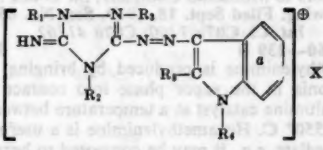
3,635,942

BASIC IONINOTRIAZOLE AZOINDOLE DYESTUFFS

Reinhard Mohr, Offenbach (Main), and Johann Ostermeier, Rembrucken, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,104
Claims priority, application Germany, Feb. 22, 1968, P 17 19 075.9
Int. Cl. C09b *29/00, 29/36;* D06p *1/08*
U.S. Cl. 260—157 6 Claims

Basic azo dyestuffs of the formula:



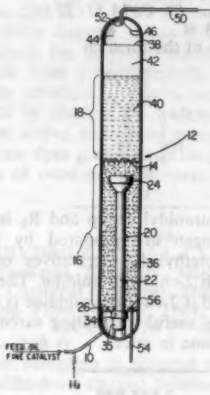
wherein R_1 is aryl, R_2 and R_3 are alkyl or aralkyl, R_4 and R_5 are hydrogen or unsubstituted or substituted alkyl or aryl, $X^{\ominus}$ is an anion, and in which the benzene nucleus *a* may contain non-ionic substituents which dyestuffs are suitable for the dyeing or printing of tannin-treated cellulose fibers, silk, leather or fully synthetic fibers such as acetate rayon, polyamide or acid-modified polyester, especially fibers consisting of polyacrylonitrile or polyvinylidene cyanide, and which give in the majority of cases dyeings with very clear and deep colours and good fastness to light, fulling, cross-dyeing, carbonizing, chlorinating, perspiration, decatizing, steaming, ironing, rubbing and solvents.

3,635,943

HYDROTREATING PROCESS WITH COARSE AND FINE CATALYSTS

Norman C. Stewart, Lake Charles, La., assignor to Cities Service Research and Development Company, New York, N.Y.

Filed Oct. 16, 1969, Ser. No. 866,874
Int. Cl. C10g *13/02, 23/00*
U.S. Cl. 208—157 7 Claims



A process for treating heavy hydrocarbon oil with hydrogen gas at high pressures and temperatures in the presence of particulate catalysts is disclosed herein. The process comprises feeding the heavy hydrocarbon oil, preferably a vacuum or atmospheric residuum, hydrogen gas and fine particulate catalyst in the size range of up to about 600 microns upwardly through an expanded bed of coarse particulate catalyst ranging in size from about 1/32 to about 3/8 inch at a sufficient velocity to maintain the bed in an expanded, random motion state, reducing the upward velocity of the hydrocarbon oil, hydrogen gas and fine particulate catalyst above the expanded coarse catalyst bed to a velocity sufficient to establish an expanded fine catalyst bed, and withdrawing the treated hydrocarbon oil and effluent gases from the high pressure, high temperature zone above the fine catalyst bed.

3,635,944

HIGHLY WATER SOLUBLE DISAZO DYESTUFFS

Alvin C. Litke, West Seneca, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 12, 1969, Ser. No. 823,989
Int. Cl. G09b *31/04*
U.S. Cl. 260—191 6 Claims

Highly water soluble phenylazophenylazonaphthyl tri-(lithium sulfonate) dyestuffs adapted to dye cellulosic fibers bright, light-fast violet shades.

3,635,945

TRIALKYLPHOSPHINEGOLD COMPLEXES OF 1-β-D-GLUCOPYRANOSIDES

Piroska E. Nemeth, Philadelphia, and Blaine M. Sutton, Hatboro, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1969, Ser. No. 871,956
Int. Cl. C07c 47/18
U.S. Cl. 260—210 R 12 Claims

Trialkylphosphinegold complexes of 1-β-D-glucopyranosides having anti-arthritic activity are prepared by reaction of an appropriate glucopyranoside derivative with a trialkylphosphinegold halide.

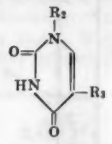
3,635,946

N_1-(2'-FURANIDYL)-DERIVATIVES OF 5-SUBSTITUTED URACILS

Solomon Aronovich Giller, Ul. Pernavas 10, kv. 76; Regina Abramovna Zhuk, Ul. Gorkogo 77–20; Marger Jurievich Lidak, Ul. Mezhotnes 37, kv. 1; and Aina Avgustovna Zidermane, Ul. Engelsa 111a, kv. 9, all of Riga, U.S.S.R.

No Drawing. Continuation of application Ser. No. 692,323, Dec. 21, 1967. This application July 22, 1969, Ser. No. 849,559
Int. Cl. C07d 51/52
U.S. Cl. 260—211.5 R 1 Claim

Novel compounds of the formula



wherein R_2 is a 2-furanidyl group and R_3 is methyl, trihalomethyl or halogen are prepared by reacting the mercury or bis-trimethylsilyl derivatives of the corresponding uracils with 2-chlorofuranidine. The 2-pyranidyl derivative is prepared if 2-chloropyranidine is used instead. The compounds are useful in treating sarcoma 180 and Walker carcinosarcoma in mice.

3,635,947

CATALYTIC PROCESS FOR THE PREPARATION OF MONOCARBODIIMIDES AND ISOCYANATE-MONOCARBODIIMIDE ADDUCTS

Ehrenfried H. Kober, Hamden, Wilhelm J. Schnabel, Branford, and Strong K. Gardner, North Haven, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed Jan. 10, 1967, Ser. No. 608,456
Int. Cl. C07c 119/04; C07d 44/00
U.S. Cl. 260—239 A 8 Claims

Monocarbodiimides and organic isocyanate-monocarbodiimide adducts are provided by heating organic isocyanates in the presence of a catalytic amount of phenylphosphonic diamide at a temperature from about 120° to about 190° C. The monocarbodiimides are useful as catalysts and chemical intermediates; the adducts are useful in the preparation of polyurethane foams.

3,635,948

PREPARATION OF 7 - CHLORO-2,3-DIHYDRO-1-METHYL-5-PHENYL - 1H - 1,4-BENZODIAZEPINE FROM 2,3 - DIHYDRO-1-METHYL-5-PHENYL-1H-1,4-BENZODIAZEPINE BY CHLORINATION

Robert Ye-Fong Ning, Verona, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 4, 1968, Ser. No. 734,216
Int. Cl. C07d 53/04, 53/06
U.S. Cl. 260—239 7 Claims

7 - chloro-2,3-dihydro-1-methyl-5-phenyl-1H-1,4-benzodiazepine (A) from 2,3-dihydro-1-methyl-5-phenyl-1H-1,4-benzodiazepine by chlorination. (A) is useful as an anticonvulsant, muscle relaxant and sedative agent.

3,635,949

METHOD FOR THE PRODUCTION OF 7-CHLORO-2-METHYLAMINO - 5-PHENYL-5H - 1,4-BENZODIAZEPINE - 4 - OXIDE, AND 7 - CHLORO-2-METHYL-AMINO - 5 - PHENYL-3H-1,4-BENZODIAZEPINE-4-OXIDE

Torben Torsbjerg Moller, Aarhus, Poul Nedenskov, Birkerod, and Henning B. Rasmussen, Logten, Denmark, assignors to Aktieselskabet Grindstedvaerket, Aarhus, Denmark

No Drawing. Filed Sept. 16, 1968, Ser. No. 760,088
Claims priority, application Denmark, Oct. 19, 1967, 5,198/67
Int. Cl. C07d 53/06
U.S. Cl. 260—239 BD 1 Claim

The invention relates to the novel 7-chloro-2-methylamino-5-phenyl-5H-1,4-benzodiazepine-4-oxide (I), to the production thereof by oxidizing 7-chloro-2-methyl-amino-4 - hydroxy - 5 - phenyl - 4,5 - dihydro - 3H - 1,4 - benzodiazepine, the reaction product being subjected to fractional crystallisation to recover (I), and to the conversion of (I) into 7 - chloro - 2 - methylamino-5-phenyl-3H-1,4-benzodiazepine-4-oxide (II) by heating the reaction product from the said oxidation in alkaline solution.

3,635,950

N-ADAMANTYL-3-AZETIDINOL AND DERIVATIVES THEREOF

Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,936
Int. Cl. C07d 25/00
U.S. Cl. 260—239 A 7 Claims

Disclosed herein are N-adamantyl-3-azetidinols and certain derivatives thereof. These novel compounds are useful in prophylactically treating certain viral infections.

3,635,951

PREPARATION OF AZEPINE DERIVATIVES

Donald A. Tyssee and John P. Petrovich, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,209
Int. Cl. C07b 1/00; C07d 41/02
U.S. Cl. 260—239 B 13 Claims

Hexamethylenimine (2,3,4,5,6-hexahydroazepine) is produced by bringing tetrahydropyran-2-methanol, hydrogen and ammonia in the vapor phase into contact with a catalyst consisting essentially of a reducing metal and a dehydration material at temperatures between about 150° to 550° C. Partially hydrogenated azepine is produced when the process is carried out in the absence of hydrogen and the reducing metal. Hexamethylenimine is useful as a component in insecticide and herbicide formulations. Partially hydrogenated azepine may be converted to aminohexanol or hexamethylenimine.

3,635,952

CONVERSION OF OXEPANE TO HEXAMETHYLENIMINE

Donald A. Tyssee and John P. Petrovich, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,176
Int. Cl. C07b 1/00; C07d 41/02
U.S. Cl. 260—239 B 2 Claims

Hexamethylenimine is produced by bringing oxepane and ammonia in the vapor phase into contact with an activated alumina catalyst at a temperature between about 150° and 550° C. Hexamethylenimine is a useful chemical intermediate, e.g., it may be converted to hexamethylenediamine which is a monomer in the manufacture of nylon 66. Also, it is useful in herbicide and insecticide compositions.

3,635,953

2-AMIDOPENICILLINS AND METHODS FOR THEIR PREPARATION

Milton Wolf, West Chester, and John H. Sellstedt, King of Prussia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 760,090, Sept. 17, 1968. This application July 22, 1969, Ser. No. 843,841

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—239.1 12 Claims

This invention concerns 2-amidopenicillins and 2-amidocephalosporins having potent antibiotic activity per se, and following hydrolysis to their corresponding acid forms. These 2-amido compounds are prepared by the amidation of penicillin or cephalosporin precursors. Alternatively, 2-amido-6-aminopenicillanic acids and 2- amido-7-aminocephalosporanic acids may be acylated to afford these compounds.

3,635,954

3-HYDROXY-Δ^5-PREGNANE DERIVATIVES SUBSTITUTED AT C–7 WITH KETO, LOWER ALKANOYLOXY OR HYDROXY

Richard Wightman Kierstead and Ronald Andrew Lemahieu, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,482

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 41 Claims

3-hydroxy-Δ^5 pregnane derivatives substituted at C–6 with chloro or lower alkyl and substituted at C–7 with keto, lower alkanoyloxy or hydroxy and 3,5-dihydroxy-Δ^6 pregnane derivatives substituted at C–6 with lower alkyl which are useful as progestational agents.

3,635,955

SUBSTANTIALLY PURE BASIC DYES DERIVED FROM 4-METHYLENE-1,3-DISUBSTITUTED-3,4-DIHYDROPYRIMIDONES

Guenter Hansen and Matthias Seefelder, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation-in-part of application Ser. No. 655,315, July 24, 1967. This application May 22, 1970, Ser. No. 39,861

Claims priority, application Germany, July 26, 1966, P 15 44 410.7

Int. Cl. C07d *51/34*

U.S. Cl. 260—240 G 1 Claim

Substantially pure basic dyes derived from 4-methylene-1,3-disubstituted-3,4-dihydropyrimidones which are eminently suitable for dyeing and printing textile materials made of acrylonitrile polymers.

3,635,956

BENZOTHIAZINES, RELATED COMPOUNDS, DERIVATIVES AND SALTS THEREOF

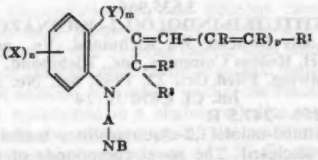
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 1. 1968, Ser. No. 709,808

Int. Cl. C07d *93/12*

U.S. Cl. 260—240 K 12 Claims

This disclosure relates to compounds having the formula



wherein X is hydrogen, halogen, trifluoromethyl, alkoxy, alkylthio, amino, dialkylamino, hydroxy, cyano or nitro; Y is O, S, sulfone (SO_2) or sulfoxide (SO); R is hydrogen or lower alkyl; R' is lower alkyl, X-substituted phenyl (e.g., 4-fluorophenyl; pentafluorophenyl, and so forth); 4 - phenylphenyl; piperonyl (3,4 - methylenedioxyphenyl); X-substituted thienyl; X-substituted furyl; pyridyl; X-substituted phenyl alkylene (e.g., benzyl, 4-chlorophenethyl); naphthyl; cycloalkyl (e.g., cyclopropyl; cyclobutyl, cyclohexyl, and so forth), cycloalkenyl (3-cyclohexenyl); polycyclic alkylene (e.g., adamantyl) and polycyclic alkenyl (e.g., 5-norbornenyl); R^2 and R^3 taken separately are each hydrogen, and taken together are oxo (O=); *m* is 0 or 1; *p* is 0 or 1; and *n* is 1 to 4; A is lower alkylene (e.g., from one to six carbons) and NB is a basic nitrogen containing radical; pharmaceutically acceptable salts thereof; and to processes for their preparation. Compounds having the above structure possess central nervous system depressant activity as well as antibacterial and disinfectant activity.

3,635,957

STYRYL DYES

Guido R. Genta, Lock Haven, Pa., assignor to American Aniline Products, Inc.

No Drawing. Filed May 20, 1969, Ser. No. 826,272

Int. Cl. C07d *91/44*

U.S. Cl. 260—240 R 6 Claims

Water-insoluble disperse yellow dyes, particularly suitable as colorants for polyester fibers, are provided. The dyes are made from a benzaldehyde intermediate having as part of its structure a 2-mercaptobenzothiazole or a thiazolinethiol by reacting the intermediate with a nitrile containing an active methylene group, such as malononitrile. The new dyes give dyeings on polyethylene terephthalate fibers of outstanding fastness properties.

3,635,958

4,7-DIHYDRO-2-STYRYL-1,3-DIOXEPINS

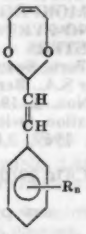
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,528

Int. Cl. C07d *17/00*

U.S. Cl. 260—240 D 2 Claims

The present invention is directed to new compounds, namely, 4,7-dihydro-2-styryl-1,3-dioxepins corresponding to the formula:



wherein R represents a lower alkyl group of from 1 to about 8, both inclusive, carbon atoms, and *n* is 0, 1, 2, 3, 4, or 5. The compounds are suitable for use as fungicides and herbicides.

3,635,959

2-[4-(3-LOWERALKYL - 4 - PHENYL-v-TRIAZOLE)-STYRYL]-BENZOTHIAZOLES AND BENZOXAZOLES

Gaudenz Girell di Giovanoel, Arlesheim, Basel-Land, and Reinhard Zweidler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,214

Claims priority, application Switzerland, Nov. 22, 1968, 17,398/68

Int. Cl. C07d *85/48*

U.S. Cl. 260—240 D 7 Claims

2-[4-(3-alkyl-4-phenyl-v-triazole)-styryl]-benzoxazoles and -benzothiazoles are brighteners for organic material.

The compounds are obtained from the oxims of the coupling products of p-diazo-2-styrylbenzoxazoles and benzylalkylketones through splitting off water.

3,635,960

PARA-PHENYLTHIDIAZOLYL- AND PARA-PHENYLOXDIAZOLYL DERIVATIVES OF STYRYLBENZOXAZOLES OR OF STYRYLBENZOTHIAZOLES

Gaudenz Girell di Giovanoel, Arlesheim, Basel-Land, and Reinhard Zweidler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,215
Claims priority, application Switzerland, Nov. 22, 1968, 17,397/68
Int. Cl. C07d *91/62*
U.S. Cl. 260—240 D 7 Claims

p-Phenylthidiazolyl- and p - phenyloxdiazolyl-derivatives of styrylbenzoxazoles or of styrylbenzothiazoles are brighteners of organic material. The compounds are obtained from the corresponding benzoylhydrazide-carbonyl compounds through splitting off of water.

3,635,961

CEPHALOSPORINS AND PROCESS FOR THEIR PREPARATION

Kenneth Butler, Waterford, Conn., assignor to Pfizer, Inc., New York, N.Y.

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,305
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 13 Claims

Esters of α-carboxy- and α-carbothiolic-α-aryl acetyl derivatives of: (a) 7-aminocephalosporanic acid; (b) desacetyl 7-aminocephalosporanic acid; (c) desacetoxy 7-aminocephalosporanic acid; and (d) the tertiary amine derivatives of 7-aminocephalosporanic acid; the corresponding acids derived therefrom, and the salts thereof, which compounds exhibit antimicrobial activity, and methods for their preparation.

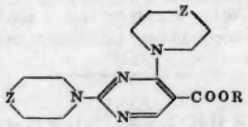
3,635,962

CERTAIN 2,4 - BIS-MORPHOLINO- AND 2,4-BIS-THIAMORPHOLINO-PYRIMIDINE - 5 - CARBOXYLIC ACID ESTERS

Edmond G. Wyss, Bern, Switzerland, assignor to Dr. A. Wander S.A., Bern, Switzerland

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,646
Claims priority, application Switzerland, Nov. 8, 1968, 16,679/68; Feb. 28, 1969, 3,039/69; Aug. 5, 1969, 11,857/69
Int. Cl. C07d *99/04, 99/06*
U.S. Cl. 260—243 B 46 Claims

The invention concerns new pyrimidine derivatives of the Formula I,



(I)

in which:

Z signifies oxygen of sulphur, and

R signifies alkyl, halo-substituted alkyl having up to 4 halo substituents, alkenyl, alkoxyalkyl, cycloalkyl or cycloalkylalkyl, each significance having up to 9 carbon atoms,

their acid addition salts and pharmaceutical compositions thereof, as well as to processes for the production of such compounds.

The compounds exhibit narcotic or hypnotic activity.

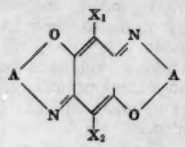
3,635,963

6,13-CYANO, NITRO, OR ARYLSULPHONYL TRIPHENODIOXAZINE DYESTUFFS

Stefan Hari, Basel, and Karl Ronco, Riehen, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed June 10, 1969, Ser. No. 832,023
Claims priority, application Switzerland, June 12, 1968, 8,709/68
Int. Cl. C07d *87/48*
U.S. Cl. 260—246 6 Claims

Dioxazines of the formula



in which A represents an ortho-arylene radical, X_1 represents a cyano, nitro or arylsulphonyl group, and X_2 represents a cyano, nitro or arylsulphonyl group or a hydrogen or halogen atom, are valuable pigments useful for coloring plastic masses in fast shades.

3,635,964

5-MORPHOLINYL-2,1-BENZISOTHIAZOLINES

Joseph A. Skorcz, Milwaukee, and John T. Suh and Claude I. Judd, Mequon, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,119
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 6 Claims

The compounds are 2,1-benzisothiazoline - 2,2-dioxides substituted in the 5-position by a 2-morpholinyl group. The compounds are useful as central nervous system depressants. The compounds may also be used as intermediates in the preparation of pickling agents, mothproofing agents and wood preservatives. Compounds disclosed include 1-methyl-5-(4-benzyl-5-oxo - 2 - morpholinyl)-2,1-benzisothiazoline - 2,2 - dioxide, 1-methyl-5-(4-benzyl-2-morpholinyl)-2,1-benzisothiazoline - 2,2 - dioxide hydrochloride, and 1-methyl-5-(2-morphalinyl) - 2,1 - benzisothiazoline-2,2-dioxide hydrochloride.

3,635,965

THIENO[2,3-d:4,5-d']DIPYRIMIDIN-4(3H)-ONES

Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,034
Int. Cl. C07d *99/06*
U.S. Cl. 260—247.1 4 Claims

This invention concerns thieno[2,3 - d:4,5 - d']dipyrimidin-4(3H)-ones which pharmacologically efficacious as central nervous system depressants.

3,635,966

6-SUBSTITUTED-INDOLO[1,2-c]QUINAZOLINES

Robert Louis Duncan, Jr., Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,612
Int. Cl. C07d *59/14*
U.S. Cl. 260—247.5 R 6 Claims

6-substituted-indolo[1,2-c]quinazolines useful as sedatives are disclosed. The novel compounds of the invention are prepared by reacting 6-halomethylindolo[1,2-c] quinazolines with nitrogen-containing heterocyclic compounds.

3,635,967

ALPHA-(TERTIARY AMINOMETHYL)-PHENYL-ALPHA PYRIDYL OR C-PIPERIDYL-BENZYL ALCOHOLS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Sept. 22, 1966, Ser. No. 581,152, now Patent No. 3,497,508, dated Feb. 24, 1970. Divided and this application Nov. 17, 1969, Ser. No. 877,453

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 R 8 Claims

Pyridyl and piperidyl benzyl alcohols substituted in the α-position with a substituted methylphenyl moiety useful as anti-inflammatories and anti-diabetics are obtained from corresponding benzophenones and a pyridyl lithium compound.

3,635,968

PRODUCTION OF CYANURIC ACID

Horst Goelz, Schwetzingen, Hubert Suter and Klaus Juergen Fust, Ludwigshafen, and Walter Himmele, Walldorf, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 9, 1969, Ser. No. 840,247

Claims priority, application Germany, July 9, 1968, P 17 70 827.9

Int. Cl. C07d *55/36*

U.S. Cl. 260—248 A 5 Claims

Production of cyanuric acid from urea and/or biuret at elevated temperature using an unsubstituted or substituted N-cyclohexylpyrrolidone as solvent.

3,635,969

PROCESS FOR THE PRODUCTION OF TRIALLYL CYANURATE

Isao Yamada, Tokyo, Japan, assignor to Kabushiki Kaisha Musashino Kagaku Kenkuyjo, Tokyo, Japan

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,192

Claims priority, application Japan, Apr. 26, 1969, 44/32,235

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS 10 Claims

Triallyl cyanurate is prepared by an improved process from cyanuric chloride and an aqueous allyl alcohol solution. Such improved process allows for the production of high yields of a high quality triallyl cyanurate without requiring the necessary purification of the prior art by carrying out such improved process under the following conditions:

(a) the concentration of said aqueous allyl alcohol solution must be about 70% by weight;

(b) the amount of allyl alcohol contained in said aqueous allyl alcohol solution must be about 4.5 times the molar quantity of the total amount of cyanuric chloride added;

(c) the concentration of said aqueous caustic soda solution must be about 40±0.5% by weight;

(d) additions of said aqueous caustic soda solution and cyanuric chloride must be made to said aqueous allyl alcohol solution alternately so that the reaction solution is maintained in a slightly alkaline state at all times and the temperature of the reaction solution is maintained constantly at 15±3° C.; and

(e) the total amount of the caustic soda added must be about 3.3 times the molar quantity of the total amount of the cyanuric chloride added.

3,635,970

CRYSTALLINE MELAMINE PYROPHOSPHATE

Robert Glenn Fessler, Martinsville, and Bruce Charles Tredinnick, Bound Brook, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,168

Int. Cl. C07d *55/24*

U.S. Cl. 260—249.6 7 Claims

A new crystalline form of melamine pyrophosphate having its maximum intensity at a peak in its X-ray diffraction pattern of 3.25 A. and a process for making it wherein a pyrophosphate salt is added to an aqueous system of melamine and a mineral acid present in at least twice the stoichiometric amount of melamine are provided.

3,635,971

3,(3,4-DIHYDRO-3-OXO-2-QUINOXALINYL) PROPIONAMIDES

Tobias O. Yellin, Skokie, Ill., assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed June 18, 1970, Ser. No. 47,617

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R 10 Claims

3-(3,4-dihydro-3-oxo - 2 - quinoxalinyl)propionamides which are useful as tranquilizers and antidepressants.

3,635,972

3-METHYL-2-QUINOXALINECARBOXAMIDE-DI-N-OXIDES

Timothy H. Cronin, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed July 22, 1969, Ser. No. 843,810

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R 6 Claims

Novel 3-methyl-2-quinoxalinecarboxamide-di-N-oxides wherein the carboxamide group is represented by —CON-(R_1)-alkylene-Z wherein Z is lower alkanoylamino, mono-, or di(lower alkyl)amino, hydroxy, lower alkoxy, lower alkanoyloxy, carboxy, carbo(lower)alkoxy or carbamyl and R_1 is hydrogen or methyl are described. The products are useful as bactericides.

3,635,973

METHOD OF PREPARING 3-SUBSTITUTED PYRIDOPYRIMIDINEDIONES AND LUMAZINES

Richard L. Jacobs, Perrysburg, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 740,090, June 26, 1968. This application Nov. 20, 1969, Ser. No. 878,593

Int. Cl. C07d *57/28*

U.S. Cl. 260—251.5 9 Claims

A method of preparing 3-substituted-pyrido[2,3-d]pyrimidine-2,4(1H,3H)-diones, 3-substituted-pyrido[3,2-d]pyrimidine - 2,4(1H,3H) - diones, 3 - substituted-pyrido[3,4-d]pyrimidine - 2,4(1H,3H) - diones, 3 - substituted pyrido[4,3-d]pyrimidine-2,4(1H,3H)-diones, and 3-substituted lumazines from the corresponding N-monosubstituted 2,3- and 3,4-pyridinedicarboxamides, and 2,3-pyrazinedicarboxamides, in which the aforesaid compounds are reacted with an alkali or alkaline earth metal hypohalite in the presence of a base, preferably aqueous sodium hydroxide. Many of the pyridopyrimidinediones and lumazines thus formed are useful as agricultural chemi-

cals, in particular as herbicides, and the others are peculiarly useful, because of their close chemical similarity but drastically different herbicidal activity, in investigatory research as to the relationship between chemical structure and herbicidal structure.

3,635,974

α-PHENYL-2-AMINOMETHYL-BENZYLALCOHOLS AND SALTS THEREOF

Kutr Freter, Beaconsfield, Quebec, Manfred Götz, Hudson, Quebec, and James T. Oliver, Beaconsfield, Quebec, Canada, and Karl Zeile, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,750

Int. Cl. C07c *87/28*; C07d *5/12, 57/36*

U.S. Cl. 260—253 **2 Claims**

The compounds are α-substituted 2-aminomethyl-benzylalcohols and their non-toxic acid addition salts, useful as anorectics in warm-blooded animals.

3,635,975

PYRROLO[2,3-d:4,5-d']DIPYRIMIDINE DERIVATIVES

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,051

Int. Cl. C07d *57/14*

U.S. Cl. 260—256.5 R **5 Claims**

This invention concerns 4-amino-5-methyl-5H-pyrrolo [2,3-d:4,5-d']dipyrimidines and 5 - methyl-5H-pyrrolo [2,3-d:4,5-d']dipyrimidine-2,4-dithiols which are pharmacologically active as central nervous system depressants.

3,635,976

1 - HETEROCYCLIC ALKYL-1,2,3,4-TETRAHYDROQUINAZOLINONES AND ANALGESIC INTERMEDIATES THEREOF

Bola Vithal Shetty, Rochester, N.Y., assignor to Pennwalt Corporation, East Orange, N.J.

No Drawing. Filed Dec. 20, 1967, Ser. No. 691,955

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 **19 Claims**

1 - heterocyclic alkyl-1,2,3,4-tetrahydroquinazolinones, acid addition salts thereof, and intermediate compounds having analgesic properties. A representative quinazoline compound is 1-[2-(1-phenyl-4-piperazinyl)ethyl]-2-phenyl-1,2,3,4-tetrahydro-4-quinazolinone. A representative analgesic intermediate is 2[2-(4-[1-phenyl]piperazinyl) ethylamino] benzamide.

3,635,977

CERTAIN 6-TRIFLUOROMETHYLCYTOSINES AND THIOCYTOSINES, THEIR SYNTHESIS, AND THEIR USE IN THE SYNTHESIS OF URACILS AND THIOURACILS

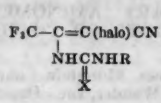
Albert William Lutz, Montgomery Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,679

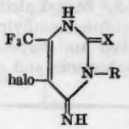
Int. Cl. C07d *51/28*

U.S. Cl. 260—256.5 R **14 Claims**

3 - amino - 2 - substituted - 4,4,4 - trifluoro - 2 - butenenitriles are reacted with isocyanates or isothiocyanates in the presence of an inert solvent and from 0.75 to about 1.0 mole equivalents of strong base per mole of butenenitrile to produce the novel ureido butenenitriles of the formula:



wherein R is alkyl, alkenyl, phenyl, benzyl and substituted derivatives thereof and X is sulfur or oxygen. The ureido butenenitriles are treated with additional base to produce novel cyclic cytosines of the formula:



wherein R and X are as defined above. The cytosines can be produced directly by treating 3-amino-2-substituted-4,4,4-trifluoro-2-butenenitrile with at least 1.0 mole equivalents of base. The novel compounds are useful intermediates in the preparation of herbicidal uracils and thiouracils.

3,635,978

AMINO PYRIMIDINES

Hamish C. S. Wood, Glasgow, Scotland, and Alexander Stuart, Kent, England, assignors to The University of Strathclyde, Glasgow, Scotland

No Drawing. Filed Jan. 28, 1969, Ser. No. 794,786

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 C **2 Claims**

A compound 2-amino-4-hydroxy-6-hydroxymethyl-7,7-dimethyl-7,8-dihydropteridine, or tautomeric forms thereof and pharmaceutically acceptable salts thereof. The compound is useful as a bacteriostat and in antibacterial products. The compound has useful activity against *Cl. perfringens* and *Derm. dermatonomous.*

3,635,979

CERTAIN 6- AND/OR 7-ALKOXY-SUBSTITUTED-2,4-BIS(DISUBSTITUTED AMINO) QUINAZOLINES

Hans-Jurgen E. Hess, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Application Dec. 13, 1967, Ser. No. 690,101, now Patent No. 3,511,836, dated May 12, 1970, which is a continuation-in-part of application Ser. No. 555,704, June 7, 1966, which is a continuation-in-part of application Ser. No. 469,879, Aug. 6, 1965. Divided and this application Sept. 29, 1969, Ser. No. 871,172

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **1 Claim**

Novel 2,4-diaminoquinazolines and acid addition salts thereof, their preparation, and their use as hypotensive agents.

3,635,980

N,N'-BISHALOMETHYL PHENOBARBITAL COMPOUNDS

Julius A. Vida, Boston, and William R. Wilber, Newton, Mass., assignors to The Kendall Company, Boston, Mass.

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,292

Int. Cl. C07d *51/20*

U.S. Cl. 260—257 **4 Claims**

N,N'-bishalomethyl phenobarbital compounds, including N,N'-bischloromethyl phenobarbital, N,N'-dibromo-

methyl phenobarbital, and N,N'-bisfluoromethyl phenobarbital are described as well as therapeutic compositions containing the same and their use as anti-convulsant agents.

3,635,981

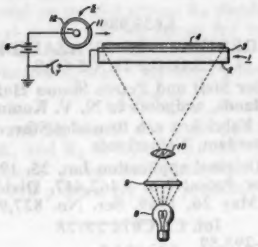
PHOTOELECTROPHORETIC IMAGING PIGMENT COMPOSITION AND PROCESS

Lester Weinberger, Brighton, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

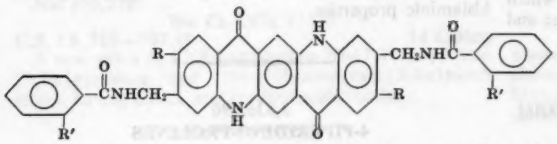
Filed Nov. 1, 1968, Ser. No. 772,596

Int. Cl. C07d *37/00*; C09b *15/00*

U.S. Cl. 260—279 3 Claims



A novel composition having the formula:



wherein R=CH_3, C_2H_5, OCH_3, OC_2H_5 or a halogen and wherein R'=COOH, COOCa/2, SO_3H, or $SO_3Ca/2$ is disclosed. Methods of preparing said composition and of using said composition in electrophoretic imaging processes are also disclosed.

3,635,982

AMINO-SUBSTITUTED-QUINOXALINYL-OXAZOLIDINES AND -OXAZINES

John R. Potoski, Rosemont, and Meier E. Freed, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Apr. 8, 1969, Ser. No. 814,443

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH 4 Claims

Novel amino-substituted 2-quinoxalinyloxazolidine - 3-amides and -sulfonamides and 2-quinoxalinylazine-3-amides and -sulfonamides (I) are provided, with pharmacological activity as central nervous system depressants and utility to induce calming. Compounds (I) are prepared by reacting a 3-(o- or p-fluoro-phenylsulfonyl- or -benzoyl)-2-(2-quinoxalinyl)-oxazolidine or -oxazine (II) with a nucleophilic agent, e.g., a organic amine.

3,635,983

11H-DIBENZO[1,2,5]TRIAZEPINES AND THEIR SALTS

Jacques R. Boissier, Paris, and Roger Ratouis, Saint-Cloud, France, assignors to Societe Anonyme dite: Roussel-UCLAF, Paris, France

No Drawing. Filed Dec. 7, 1967, Ser. No. 694,770

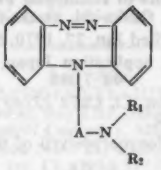
Claims priority, application France, Dec. 16, 1966, 87,809; Mar. 16, 1967, 98,985, Patent 1,511,147

Int. Cl. C07d *55/54*

U.S. Cl. 260—268 TR 7 Claims

The compounds are derivatives of 11H-dibenzo[1,2,5] triazepine and their acid addition and quaternary ammonium salts; they correspond to the formula:

(1)



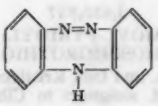
A: an alkylene radical containing from 2 to 4 carbon atoms.

R_1–R_2: lower alkyl or hydroxyalkyl radicals, or form with the nitrogen atom N to which they are bound a heterocyclic radical eventually substituted by one or several lower alkyl or hydroxyalkyl radicals.

They are very useful substances as therapeutics, namely, as thymoanaleptics, antiparkinsonians, anorectics, local anesthetics and antihistaminics.

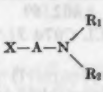
The compounds of Formula 1 are prepared by reacting, in the presence of an alkaline agent, 11H-dibenzo[1,2,5] triazepine of formula:

(2)



with a compound of formula:

(3)



(X: halogen atom).

3,635,984

1,2,3,4,6,7-HEXAHYDRO-11bH-BENZO[a]QUINOLIZINES

William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Division of application Ser. No. 642,311, May 31, 1967, now Patent No. 3,502,679, which is a continuation-in-part of application Ser. No. 480,479, Aug. 17, 1965, now Patent No. 3,383,388. This application Dec. 18, 1969, Ser. No. 886,352

Int. Cl. C07d *35/10*

U.S. Cl. 260—286 R 7 Claims

11b - R - 1,2,3,4,6,7 - hexahydro - 11bH - benzo[a] quinolizines are useful as analeptics, anti-inflammatories and hypotensive-antihypertensives. They are prepared from β-phenethylamines and ω-acylalkylenecarboxylic acids having from two to four carbons in the alkylene chain.

3,635,985

3-PHENYL-4-ACYLOXYCARBOSTYRILS

Haruki Nishimura, Osaka-fu, and Yasutaka Nagai, Kyoto-fu, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Higashi-ku, Osaka-shi, Osaka-fu, Japan

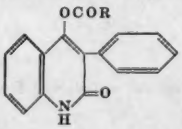
No Drawing. Filed Jan. 27, 1970, Ser. No. 6,316

Claims priority, application Japan, Feb. 1, 1969, 44/7,498

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R 3 Claims

A 3-phenyl-4-acyloxycarbostyril of the formula:



wherein R is methyl or ethoxy prepared by treating 3-phenyl-4-hydrocarbostyril with an acylating agent, which is useful as a minor tranquilizer with less side effect and low toxicity.

3,635,986

2-SUBSTITUTED AMINO-HEXAHYDROBENZO[a] QUINOLIZINES

John William Van Dyke, Jr., Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation-in-part of application Ser. No. 650,579, July 3, 1967. This application Dec. 22, 1969, Ser. No. 887,342

Int. Cl. C07d *39/00*

U.S. Cl. 260—287 R 15 Claims

2-substituted amino-hexahydrobenzo[a]quinolizines and pharmacologically acceptable salts thereof that are useful as anti-hypertensive agents. Prepared by reacting 2-oxo-1,3,4,6,7,11b-hexahydro - 2H - benzo[a] quinolizine with an amine to form a Schiff base which is then reduced.

3,635,987

O-(THIOCARBAMOYL-PYRIDYL) PHOSPHATES AND PHOSPHOROTHIOATES

Kurt Gubler, Riehen, and Odd Kristiansen, Reinach, near Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 24, 1970, Ser. No. 22,404

Claims priority, application Switzerland, Mar. 28, 1969, 4,802/69

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 E 2 Claims

New O-(thiocarbamoyl-pyridyl) phosphates and phosphorothioates having pesticidal activity are disclosed. Pesticidal compositions and a method for controlling pests are further disclosed.

3,635,988

RACEMATE OF 2-(4-METHOXY-α-PIPERIDINO-BENZYL)CYCLOHEXANOL

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba Corporation, Summit, N.J.

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,143

Int. Cl. C07d *29/34*

U.S. C. 260—293.68 A 3 Claims

The new 2-(4-methoxy-α-piperidonobenzyl)-cyclohexanol and therapeutically useful salts thereof are unique CNS-stimulants.

3,635,989

ETHER DERIVATIVES OF AZADIBENZO-CYCLOHEPTEN-5-OLS

Cornelis van der Stelt and Petrus Simon Hofman, Haarlem, Netherlands, assignors to N. V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia, Amsterdam, Netherlands

No Drawing. Original application Jan. 25, 1967, Ser. No. 611,544, now Patent No. 3,462,447. Divided and this application May 26, 1969, Ser. No. 827,908

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.59 4 Claims

The present invention relates to amino alkyl ethers of azadibenzocyclohepten-5-ols. These ethers are prepared from the corresponding 5-ol and 5-halo compounds which are also novel compounds forming a feature of this invention. The ethers of this invention, as well as the acid addition and quaternary ammonium salts thereof, are therapeutically active compounds possessing antihistaminic properties.

3,635,990

4-PIPERIDINO-PROLINES

Francesco A. Mauri, Giancarlo Jommi, and Giovanna Riva, Milan, Italy, assignors to Ravizza S.A., Lausanne, Switzerland

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,426

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.71 13 Claims

4-piperidino-proline derivatives are disclosed which are endowed with anti-inflammatory, antipyretic and analgesic properties.

3,635,991

8-[2 - 2 - SUBSTITUTED-3-INDOLYL)ETHYL] - 2-LOWER - ALKYL - 2,8 - DIAZOSPIRO[4,5]1,3-DECANEDIONES

Sydney Archer, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 733,250, May 31, 1968, which is a continuation-in-part of application Ser. No. 634,899, May 1, 1967. This application Sept. 16, 1969, Ser. No. 858,511

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.61 4 Claims

Novel 8-2-(2-substituted-3-indolyl)ethyl]-2-lower-alkyl-2,8-diazaspiro[4,5]-1,3-decanediones having useful psychomotor depressant activity.

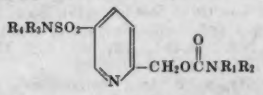
3,635,992

CERTAIN CARBAMATE DERIVATIVES OF 5-SULFON AMIDO-2-PYRIDINE METHANOLS

Michiro Inoue, Hisako Ishikawa, Takio Shimamoto, and Masayuki Ishikawa, Tokyo, Japan, assignors to Zaidan Hojin Dohmyakukohka Kenkyu Shoreikai, Tokyo, Japan

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,356
Claims priority, application Japan, Apr. 8, 1968, 43/22,804
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F 14 Claims

Carbamates of pyridinemethanol derivatives represented by the formula:



wherein R_1 stands for hydrogen atom or alkyl group, R_2 stands for hydrogen atom or alkyl, allyl, aryl, aralkyl, furfuryl, picolyl or pyridyl group, R_3 stands for hydrogen atom or alkyl group and R_4 stands for hydrogen atom, alkyl group or radical represented by the formula: $—COOR_5$ wherein R_5 stands for alkyl group or

$$—CONR_6R_7$$

wherein R_6 and R_7 stands for hydrogen atom or alkyl group, and R_1 and R_2 or R_3 and R_4 can together form a divalent alkylene group which may be interrupted by heteroatom, and process for the production thereof.

3,635,993

1,2,3,4-TETRAHYDRO-5H-[1]BENZOPYRANO-[3,4-a]PYRIDINES

Harry G. Pars, Lexington, Felix E. Granchelli, Arlington, and Raj K. Razdan, Belmont, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Original application May 29, 1967, Ser. No. 642,223, now Patent No. 3,514,464, dated May 26, 1970. Divided and this application Oct. 30, 1969, Ser. No. 870,278
Int. Cl. C07d *31/28*
U.S. Cl. 260—297 H 14 Claims

A new series of 1,2,3,4-tetrahydro-5H-[1]benzopyrano-[3,4-c]pyridines and 5H-[1]benzopyrano[3,4-c]piperidines, having C.N.S. and cardiovascular activity.

3,635,994

HALOPYRIDINE SULFENYL- AND SULFONYLHALIDES

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,463
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F 9 Claims

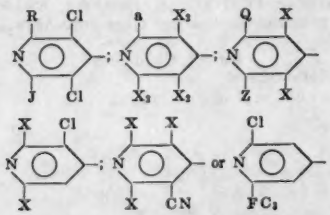
This disclosure is directed to sulfur containing substituted pyridine compounds corresponding to the formula

$$P_y—M—D$$

wherein D represents chlorine, bromine or fluorine; M represents sulfenyl (—S—) or sulfonyl

$$(—\overset{|}{S}O_2)$$

and P_y represents one of the substituted pyridyl radicals



in which X_2 represents bromine or fluorine; X represents chlorine or X_2; *a* represents hydrogen or X_2; R represents hydrogen or X; J represents trichloromethyl, tifluoromethyl or R; Q represents methyl sulfonyl

$$(CH_3\overset{|}{S}O_2)$$

or R and Z represents cyano (—CN) or methyl sulfonyl, with the proviso that D is fluorine only when M is sulfonyl. The preparation and use of these compounds as pesticides is also disclosed.

3,635,995

2-(2-IMIDAZOLIN-2-YL)METHYLTHIOPYRIDINE-N-OXIDE AND DERIVATIVES THEREOF

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Dec. 5, 1969, Ser. No. 882,707
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 G 3 Claims

Substituted imidazoles, e.g., 2 - (2 - imidazolin - 2 - yl) methylthiopyridine - N - oxide, useful as antifungals and antibacterial agents are prepared from a halomethyl-imidazoline or halo substituted methylimidazoline and a mercaptopyridine-N-oxide derivative.

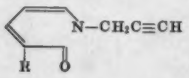
3,635,996

CERTAIN 1-(2-PROPYNYL)-2(1H)-PYRIDONES

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,903
Int. Cl. C07d *31/32*
U.S. Cl. 260—297 Z 3 Claims

The present invention is directed to new and useful compounds, namely 1-(2-propynyl) - 2(1H) - pyridones corresponding to the formula:



wherein R is hydrogen, lower alkyl groups of from 1 to about 4, both inclusive, carbon atoms or a straight or branched chain propynyloxy group. The compounds are suitable for use as herbicides.

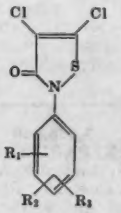
3,635,997

N-HALOPHENYLDICHLORISOTHIAZOLONES AND METHOD FOR THEIR MANUFACTURE

Werner Toepfl, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed July 1, 1969, Ser. No. 838,330
Claims priority, application Switzerland, July 5, 1968, 10,067/68
Int. Cl. C07d *91/10*
U.S. Cl. 260—302 A 7 Claims

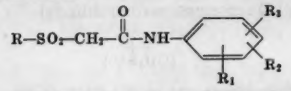
New isothiazolones of the general Formula I



(I)

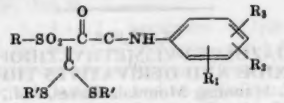
in which one of R_1, R_2 and R_3 represents halogen and each of the others of R_1, R_2 and R_3 represents hydrogen, lower

alkyl, lower alkoxy, halogen, nitro, trifluoromethyl, cyano, phenoxy or halogenophenoxy, are prepared by reacting an anilide of Formula II



(II)

in which R is alkyl or aryl, with carbon disulphide and a strongly alkaline compound, obtaining a reaction product which is then reacted with an alkylating agent to obtain the intermediate product of Formula III



(III)

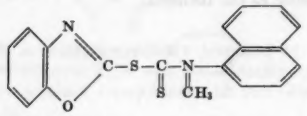
in which R' represents lower alkyl. This intermediate product is treated with a chlorinating agent to obtain the final product of Formula I. The new isothiazolones are useful as microbicides and germicides.

3,635,998
2-BENZOXAZOLYL N-METHYL-N-NAPHTHYL-DITHIOCARBAMATE

Alex Berg, Hans Eberhardt, Hans Machleidt, Alexander Wildfeuer, and Hanns Goeth, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed May 7, 1969, Ser. No. 822,731
Claims priority, application Germany, May 13, 1968, P 17 70 402.8
Int. Cl. C07d
U.S. Cl. 260—307 **1 Claim**

2-benzoxazolyl N - methyl-N-naphthyl-dithiocarbamate of the formula



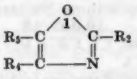
useful as an antimycotic.

3,635,999
SYNTHESIS OF OXAZOLES

Bernard Tramier and Albert Bonzom, Marseille, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,339
Int. Cl. C07d *85/44*
U.S. Cl. 260—307 R **11 Claims**

New oxazoles are prepared having the formula



where R_2 is alkyl of 1 to 6 carbon atoms, phenyl or hydroxyphenyl, R_4 is methyl and R_5 is hydrogen. A process of preparing oxazoles is disclosed comprising condensing an acetylenic compound having an electronegative group on the carbon atom in the α-position relative to the triple bond with an ammonium salt of an organic acid or an amide.

3,636,000
METHOD FOR PREPARING DITHIOURAZOLE

Michael J. Spitulnik, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,148
Int. Cl. C07d *55/06*
U.S. Cl. 260—308 C **6 Claims**

Dithiourazole is prepared by dissolving 2,5-dithiobiurea and an alkali metal carbonate in water in a proportion of at least about 0.5 mole of alkali metal carbonate per mole of 2,5-dithiobiurea and heating the resulting solution. In the presence of the alkali metal carbonate, ring closure of the 2,5-dithiobiurea occurs to yield dithiourazole and release ammonia. Optimum results are obtained by heating at reflux under an inert atmosphere for a period of at least several hours.

3,636,001
AMINE SALTS OF NITRAMINOTRIAZOLES

Fritz Reisser, Therwil, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 814,461, Apr. 8, 1969. This application Nov. 12, 1969, Ser. No. 876,088
Claims priority, application Switzerland, Apr. 16, 1968, 5,563/68
Int. Cl. A01n *9/22;* **C07d** *55/06*
U.S. Cl. 260—308 R **24 Claims**

Alkyl ammonium salts of 3-nitramino-1,2,4-triazoles useful as fungicides and acaricides.

3,636,002
1-(2-HALOBENZYLOXY-1-INDANYL)-IMIDAZOLES

Erik Fred Godefroi, Turnhout, Belgium, assignor to Janssen Pharmaceutica, N.V.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,365
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **7 Claims**

The compounds are of the class of 1-(2-halobenzyloxy-1-indanyl)-imidazoles useful for their anti-fungal activity. A novel intermediate, 1-(1-imidazolyl)-2-indanol is also presented.

3,636,003
SUBSTITUTED 2-MERCAPTOIMIDAZOLE DERIVATIVES

Karl J. Doebel, Ossining, N.Y., and Andre R. Gagneux, Basel, Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 721,928, Apr. 17, 1968, now Patent No. 3,488,423, and Ser. No. 721,930, Apr. 17, 1968, now Patent No. 3,505,350, which is a continuation-in-part of application Ser. No. 500,245, Oct. 21, 1965, which in turn is a continuation-in-part of application Ser. No. 204,643, June 22, 1962. This application Nov. 17, 1969, Ser. No. 877,483
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **6 Claims**

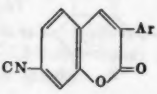
The compounds are of the class of substituted 2-mercaptoimidazole derivatives which have anti-inflammatory utility. An illustrative example is 1-(4-fluorophenyl)-5-methyl-2-imidazolemercaptoacetic acid.

3,636,004
7-CYANO-COUMARINS

Klaus-Dieter Bode, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 5, 1969, Ser. No. 821,970
Claims priority, application Germany, May 6, 1968, P 17 68 364.6
Int. Cl. C07d *7/26*
U.S. Cl. 260—308 R **2 Claims**

7-cyano-coumarin of the formula



in which Ar denotes an optionally substituted aromatic carbocyclic or aromatic heterocyclic radical as defined hereinbelow which are adapted for use to protect organic materials against ultraviolet radiation.

3,636,005

ACYL SUBSTITUTED 2-BENZIMIDAZOLE-CARBAMATES

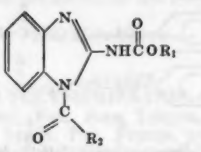
Hein L. Klopping, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Division of application Ser. No. 714,462, Mar. 20, 1968, now Patent No. 3,541,213, which is a continuation-in-part of application Ser. No. 629,900, Apr. 11, 1967, which in turn is a continuation-in-part of application Ser. No. 548,034, May 6, 1966. Divided and this application July 20, 1970, Ser. No. 56,644

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **5 Claims**

Acyl substituted 2-benzimidazolecarbamates of the formula below are useful as mite ovicides and fungicides.



wherein R_1 is methyl or ethyl and R_2 is alkyl of 1–4 carbons, cycloalkyl of 3–4 carbons, methoxycarbonyl or ethoxycarbonyl. An exemplary species of the general class is the compound: methyl-1-acetyl-2-benzimidazolecarbamate.

3,636,006

WATER-INSOLUBLE ANTHRAQUINONE DERIVATIVES

Jean-Frederick Guye-Vuilleme and Otto Ruettner, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Oct. 2, 1967, Ser. No. 671,943

Claims priority, application Switzerland, Oct. 10, 1966, 14,576/66; Oct. 18, 1966, 14,999/66; Jan. 25, 1967, 1,070/67

Int. Cl. C09b *1/50;* **C07c** *121/78*

U.S. Cl. 260—378 **6 Claims**

Aminoanthraquinone derivatives containing a N-cyanomethylamino group and process for their preparation.

3,636,007

OXYGEN COMPLEXES OF RING SUBSTITUTED N,N' - ETHYLENEBIS(SALICYLIDENEIMINATO) COBALT (II)

Fausto Calderazzo, Via Fiorentina 12, 51017 Pescia, Pistoia Italy, and Carlo Floriani, Via Prinetti 19, 56100 Pisa, Italy

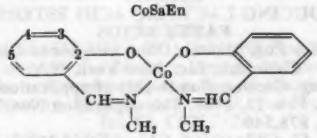
No Drawing. Continuation-in-part of application Ser. No. 635,380, May 2, 1967. This application Mar. 13, 1969, Ser. No. 807,117

Int. Cl. C07f *15/06*

U.S. Cl. 260—270 R **8 Claims**

Oxygen complexes of N,N'-ethylenebis(salicylideneiminato) cobalt (II)

CoSaEn



and of substitution products having substituents such as halogen, alkoxy, or the like on a carbocyclic ring thereof are produced by a complexing reaction of such compound with oxygen and an organic ligand. The reaction medium is an organic liquid which comprises an aprotic organic solvent that will complex as a ligand with the cobalt compound. The complex products have two gram atoms oxygen and one or two moles of the organic ligand complexed per two moles of the CoSaEn moiety. The complexes are prepared by dispersing or dissolving the CoSaEn compound in an organic liquid which comprises the ligand and then exposing the mixture to oxygen. Suitable aprotic solvent ligands include dimethylformamide, dimethylsulfoxide, pyridine oxide and the like. Pyridine similarly complexes making a complex having one mole pyridine, one mole CoSaEn and two gram atoms oxygen.

3,636,008

PROCESS FOR THE PRODUCTION OF AN ANTHRAQUINONE DISPERSE DYE

Eiji Yamada, Ibaragi-shi, Kunimasa Hamaguchi, Takarazuka-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed June 3, 1969, Ser. No. 830,147

Claims priority, application Japan, June 14, 1968, 43/41,270, 43/42,171

Int. Cl. C09b *1/06, 1/50*

U.S. Cl. 260—380 **2 Claims**

A process for the production of a 1,8-dioxy-4,5-dinitroanthraquinone halide by reacting borate of chrysazin with a nitrating agent in a fuming sulfuric acid medium, successively reacting the resulting mixture containing borate of the nitroanthraquinone with a halogenating agent and recovering a 1,8-dioxy-4,5-dinitroanthraquinone halide according to the conventional procedure; and a process for the production of a 1,8-dioxy-4,5-diaminoanthraquinone halide by reacting the mixture containing borate of the nitroanthraquinone halide obtained according to the above-mentioned procedure, without recovering a 1,8-dioxy-4,5-dinitroanthraquinone halide, with a reducing agent in sulfuric acid medium, wherein the halide means bromide or chloride.

3,636,009

2-(8-CYCLOHEXYLOCTYL OR 7 - CYCLOHEXYLHEPTYL) - 1,4 - DIHYDRO - 4 - IMINO-1-OXONAPHTHALENE

Louis F. Fieser, 27 Pinehurst Road, Belmont, Mass. 02178; Sydney Archer, Bethlehem (52 Wisconsin Ave., Delmar, N.Y. 12054); and Roman R. Lorenz, 3 Highland Drive, East Greenbush, N.Y. 12061

No Drawing. Original application Oct. 25, 1966, Ser. No. 589,204. Divided and this application Oct. 20, 1969, Ser. No. 870,806

Int. Cl. C07c *119/14*

U.S. Cl. 260—396 N **2 Claims**

This invention relates to 2-cyclohexylalkyl-1,4-dihydro-4-imino-1-oxonaphthalenes which are intermediates for anti-malarial agents.

3,636,010

ESTERS OF STEROID-17-CARBOXYLIC ACIDS

Georg Anner, Basel, and Charles Meystre, Reinach, Basel-Land, Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 10, 1969, Ser. No. 884,002

Claims priority, application Switzerland, Dec. 23, 1968, 19,190/68

Int. Cl. C07c *167/18, 169/12*

U.S. Cl. 260—397.1 **8 Claims**

Ester of $\Delta^{1,4}$-16α-methyl - 6α,9α - difluoro - 11β,17α-dihydroxy-3-oxo-androstadiene-17-carboxylic acid, its de-

hydro derivative and the corresponding compounds having an 11-oxo group instead of the 11β-hydroxy group having good anti-inflammatory and thymolytic activity.

3,636,011
11β-FLUORO-19-NOR-STEROIDS AND PROCESS FOR THEIR PREPARATION

Gordon Hanley Phillipps, Greenford, and Alan Tulley, Liverpool, England, assignors to Glaxo Laboratories Limited, Middlesex, England

No Drawing. Continuation-in-part of application Ser. No. 572,694, Aug. 16, 1966. This application June 24, 1969, Ser. No. 836,139
Claims priority, application Great Britain, Aug. 16, 1965, 35,005/65
Int. Cl. C07c *169/06, 169/30*
U.S. Cl. 260—397.3 **9 Claims**

11β-fluoro-19-nor-steroids are prepared by reacting the corresponding 11α-hydroxy-19-nor-steroids with a fluorinating agent in an inert solvent. The novel 11β-fluoro-19-nor-steroids exhibit hormonal activity.

3,636,012
17α-(3'-HYDROXYPROPYNYL)-SUBSTITUTED STEROIDS

Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed June 16, 1969, Ser. No. 833,796
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 **6 Claims**

The compounds are 13-alkyl-17β-hydroxy-17α-(3'-hydroxypropynyl)-3-oxo-gonanes having either 4- or 5(10) unsaturation, e.g., 17β-hydroxy-17α-(3'-hydroxypropynyl)-estra-4-en-3-one, and are useful as pharmaceuticals.

3,636,013
OESTROGENS

Michel Rolland, Paris, France, assignor to Les Laboratoires Albert Rolland, Paris, France

No Drawing. Filed Aug. 2, 1966, Ser. No. 569,597
Claims priority, application France, Aug. 5, 1965, 27,431
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 **1 Claim**

3-ethoxy-1,3,5-estratriene-16α,17β-diol is a novel estrogen producing no secondary estrogenic effects such as swelling of the mammary glands or histologic alternations of male sex glands or tissues when administered. The compound is obtained from the corresponding 17-keto compound by reduction with a borohydride.

3,636,014
17β-(ALKYLTHIOALKYL)AMINOANDROST - 5-EN-3-OLS, ACYL DERIVATIVES THEREOF AND INTERMEDIATES THERETO

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,347
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 **10 Claims**

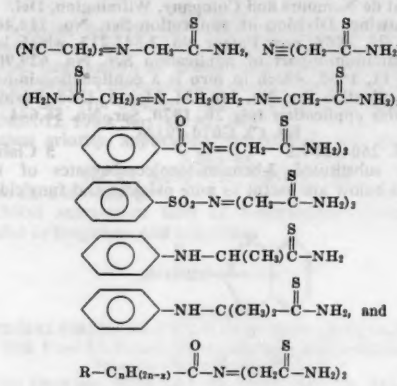
17β-(alkylthioalkyl)aminoandrost-5-en-3β-ols and the acyl derivatives thereof are prepared by condensation of the corresponding 17-keto starting material with the appropriate alkylthioalkylamine, reduction of the resulting 17-imines and, optionally, acylation of the amines so produced. The amines and corresponding acyl derivatives are useful pharmacological agents, e.g. anti-inflammatory and anti-fungal.

3,636,015
PREPARATION OF THIONAMIDES

Patricia M. Scanlon, Arlington, Mass., and Elwyn R. Young, Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,517
Int. Cl. C07c *103/44, 121/20, 153/05*
U.S. Cl. 260—402.5 **11 Claims**

In abstract, this invention is directed to thionamides having the formulas:



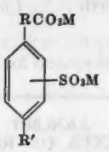
wherein R is a member selected from the group consisting of —H and —CH_3, n is 1–16, and x is 0 or 2, and to the preparation of such thionamides, all as recited hereinafter.

3,636,016
SURFACE ACTIVE AGENTS

Stephen E. McGuire, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 28, 1969, Ser. No. 828,770
Int. Cl. C07c *143/90*
U.S. Cl. 260—402 **4 Claims**

Novel surface active agents are provided having the general formula:



wherein R is a linear alkyl group containing from about 1 to 30 carbon atoms, R' is an acyclic alkyl group containing from about 1 to 30 carbon atoms, the sum of R plus R' being at least 7, and M is a cation selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg, NH_4 and substituted ammonium.

3,636,017
PRODUCING LACTYLIC ACID ESTERS OF FATTY ACIDS

Stanley Eng, Mentor, Ohio, assignor to Glyco Chemicals, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 526,684, Feb. 11, 1966. This application Nov. 20, 1969, Ser. No. 878,540
Int. Cl. C07c *69/68;* **C11c** *3/00;* **A21d** *2/16*
U.S. Cl. 260—410.9 R **12 Claims**

Production of fatty acid esters of lactic acid by (a) reacting lactic acid with an at least partly water-soluble

alkali metal alkaline earth metal or ammonium base to form the corresponding lactic acid salt, (b) esterifying said salt with a fatty acid and (c) treating the resulting salt of the acyl lactic acid with mineral acid to convert it to the fatty acid ester of lactic acid. The products are useful as additives for bakery products.

3,636,018

ESTERS OF 2,7,11-TRIMETHYL-3-METHYLENE-4,6,10-DODECATRIENOIC ACID USEFUL AS INSECTICIDES

Karel Hejno, Vaclav Jarolim, Karel Slama, and Frantisek Sorm, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed July 24, 1969, Ser. No. 845,127
Int. Cl. C07c *69/52, 69/66;* A01n *9/24*
U.S. Cl. 260—410.5 10 Claims

Methods employing and compositions comprising novel esters of 2,7,11 - trimethyl-3-methylene-4,6,10-dodecatrienoic acid which are useful for the control of insects.

3,636,019

ZIEGLER POLYMERIZATION CATALYSTS

Philippe Mornet, Pau, Jean Teitgen, Arthez-de-Bearn, and Gilbert Marie, Pau, France, assignors to Société Nationale des Petroles d'Aquitaine, Tour d'Aquitaine, Courbevoie, France

No Drawing. Filed Aug. 7, 1968, Ser. No. 750,758
Claims priority, application France, Aug. 9, 1967, 117,337
Int. Cl. C08f *15/04*
U.S. Cl. 252—429 B 7 Claims

Alkoxy alkyl halosulphites and halosulphates are used as activators for Ziegler-type polymerization catalysts wherein the transition metal compound is preferably a vanadium compound and the organoaluminum is preferably a haloaluminum alkyl.

3,636,020

METHOD FOR PREPARING DIORGANIC MERCURY COMPOUNDS

Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,099
Int. Cl. C07f *3/12*
U.S. Cl. 260—433 13 Claims

The invention provides an improved method for preparing diorganic mercury compounds. The method comprises disproportionating an organic mercury salt by contacting the organic mercury salt with a polyamine, such as a polyethyleneimine having a molecular weight between about 600 and 100,000, ethylenediamine, diethylenetriamine, triethylenetetraamine, and propylenediamine in water thereby forming the water-insoluble diorganic mercury compound and a water-soluble mercury-polyamine complex. The diorganic mercury compound may be separated and recovered from the reaction mixture by filtration, layer separation, or distillation.

3,636,021

TETRAMETHYL LEAD MANUFACTURE

Denis Lamarche and Maurice Decarie, Montreal, Quebec, Canada, assignors to Miranda Inc., Apartado, Panama

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,522
Int. Cl. C07f *7/24*
U.S. Cl. 260—437 R 6 Claims

A process for producing tetramethyl lead comprising reacting a Pb-Na alloy and methyl chloride in the presence of a catalyst comprising an amide of a metal of Group I or Group II of the Periodic System. Preferably the metal amide is suspended in toluene or can be in solid or powder form. The catalyst additionally comprises a hydrocarbon such as cumene, phenyl acetylene or cyclopentadiene.

3,636,022

NICKEL AMIDE COMPLEXES OF BISPHENOL SULFIDES

John Harvey Bright, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,805
Int. Cl. C07f *15/04;* C08f *45/62*
U.S. Cl. 260—439 R 6 Claims

Nickel amide complexes of 2,2′-thiobis(p-alkylphenols) are provided. The complexes are prepared by the reaction of a 1:1 nickel aquo complex of a 2,2′-thiobis(p-alkylphenol) with an amide. The invention also provides stable polyolefin compositions containing said nickel amide complexes or a mixture of an amide and the aforementioned nickel aquo complex of 2,2′-thiobis(p-alkylphenol).

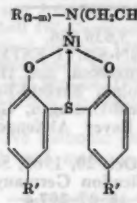
3,636,023

THIOBIS PHENOL-NICKEL (II) ALKANOLAMINE COMPLEXES AND USE IN POLYMERS

Robert William Murray, Lebanon, and Joseph Adrian Hoffman, Bridgewater Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,507
Int. Cl. C07f *15/04;* C08f *45/62*
U.S. Cl. 260—439 R 4 Claims

Nickel complexes of alkanolamines and nickel (II) thiobisphenols are provided having the general formula:



wherein R is hydrogen; alkyl containing from 1 to about 18 carbon atoms including cyclic, acyclic and branched radicals as well as combinations thereof; substituted alkyl containing from 2 to about 36 carbon atoms including cyanoalkyl, alkoxyalkyl, carbalkoxyalkyl, carbamoylalkyl and R_2N alkyl wherein R is as defined herein; aryl containing from about 6 to about 10 carbon atoms; aralkyl containing from about 7 to about 12 carbon atoms, especially mono and bicyclic ar(lower-alkyl); and alkenyl containing from about 2 to about 18 carbon atoms; R′ is an alkyl group containing from 1 to about 18 carbon atoms; and *m* is an integer from 1 to 3.

These complexes are useful as light stabilizers and/or dye receptors in polymeric compositions.

3,636,024

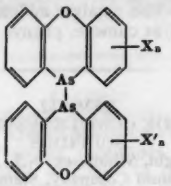
HALOGENATED-10,10′-BIPHENOXARSINES

Chun-Shan Wang and Thomas W. McGee, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 4, 1970, Ser. No. 34,615
Int. Cl. C07f *9/74;* A01n *9/00;* C08f *1/84*
U.S. Cl. 260—440 4 Claims

The present invention is directed to methods useful for protecting articles from attack by marine-fouling organisms which comprises treating an article with compo-

sitions containing an anti-fouling amount of an organoarsine compound corresponding to the formula



wherein Xand X' represent halogen, and n is 0, 1 or 2, and thereafter placing the article so treated in the environment of the marine-fouling organisms. Methods of treating articles by painting their surfaces with a paint composition containing at least 0.2 pound of one of the above organoarsine compounds per gallon of composition are described together with useful paint compositions. The halogenated organoarsine compounds of the above formula wherein n is 1 or 2 are novel compounds and constitute a second embodiment of this invention.

3,636,025

TRIALKYLSILYLMETHYL GUANIDINIUM SALTS

Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,892
Int. Cl. C07f 7/10; A61k 27/00
U.S. Cl. 260—448.2 N 4 Claims

Tri(lower) alkylsilylmethyl guanidinium salts, e.g., trimethylsilylmethyl guanidinium nitrate, are obtainable by guanylating a tri(lower) alkylsilylmethylamine, e.g., with a 1-guanyl-3,5-dimethylpyrazole salt, and are useful as anti-inflammatory agents.

3,636,026

BENZOIN-SILYL-ESTERS

Karl Fuhr, Hugo Vernaleken, and Hans-Georg Heine, Krefeld, Hans Rudolph, Krefeld-Bockum, and Hermann Schnell, Krefeld-Urdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,938
Claims priority, application Germany, Nov. 6, 1968, P 18 07 297.4
Int. Cl. C07f 7/06, 7/18
U.S. Cl. 260—448.8 R 8 Claims

The invention relates to possibly α-substituted benzoinsilyl-esters which are useful photosensitisers for the photopolymerisation of polymerisable compounds or compound mixtures including mixtures of unsaturated polyesters and copolymerisable monomeric compounds.

3,636,027

CATALYTIC CARBONYLATION OF NITRO COMPOUNDS TO PREPARE ISOCYANATES

Eric Smith, Madison, Conn., assignor to Olin Corporation

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,813
Int. Cl. B01j 11/78; C07c 119/04
U.S. Cl. 260—453 PC 18 Claims

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprised of a mixture of a sulfur-containing heteroaromatic compound and a halide of a noble metal. The heteroaromatic sulfur-containing compound is one in which the heteroaromatic ring

(a) contains at least 5 members,
(b) contains at least two double bonds,
(c) contains at least one sulfur atom, and
(d) may contain, in addition to carbon and sulfur, at least one other atom selected from the group consisting of oxygen, nitrogen, and mixtures thereof.

Thiophene and dibenzothiophene are the preferred heteroaromatic compounds, and the noble metal halide is preferably a halide of palladium, rhodium, iridium, platinum, or mixtures thereof. The catalyst system may also include a third component such as molybdenum trioxide or another metal oxide.

3,636,028

CATALYTIC CARBONYLATION OF NITRO COMPOUNDS TO PREPARE ISOCYANATES

Eric Smith, Madison, Conn., assignor to Olin Corporation

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,814
Int. Cl. B01j 11/78; C07c 119/04
U.S. Cl. 260—453 PC 11 Claims

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprised of a mixture of an oxygen-containing heteroaromatic compound and a halide of a noble metal. The heteroaromatic oxygen-containing compound is one

(a) containing at least five members in the ring,
(b) containing at least two double bonds in the ring,
(c) containing at least one oxygen in the ring, and
(d) may contain, in addition to oxygen and carbon in the ring, at least one nitrogen atom in the ring.

Dibenzofuran, 2,5-diphenyl furan, and 2,5-diphenyl oxazole are the preferred heteroaromatic oxygen compounds. The noble metal halide is preferably a halide of palladium, rhodium, iridium, platinum, or mixtures thereof. The catalyst system may also include a third component such as molybdenum trioxide or another metal oxide.

3,636,029

CATALYTIC CARBONYLATION OF NITRO COMPOUNDS TO PREPARE ISOCYANATES

Eric Smith, Madison, Conn., assignor to Olin Corporation

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,819
Int. Cl. B01j 11/78; C07c 119/04
Int. Cl. 260—453 PC 14 Claims

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprised of a mixture of an oxygen-containing sulfur compound and a halide of a noble metal. The oxygen-containing sulfur compounds include organic sulfites, organic sulfoxides, organic sulfones, and alkali metal sulfites, and derivatives thereof. Tetramethylene sulfoxide, sodium sulfite, and dibenzothiophene sulfone represent some of the preferred oxygen-containing sulfur compounds. The noble metal halide is preferably a halide of palladium, rhodium, iridium, platinum, or mixtures thereof. The catalyst system may also include a third component such as molybdenum trioxide or another metal oxide.

3,636,030

RECOVERY OF AROMATIC DIISOCYANATES FROM STILL RESIDUES

Gilbert T. Perkins, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,220
Int. Cl. C07c 119/04
U.S. Cl. 260—453 SP 5 Claims

A process for recovering aromatic diisocyanate values from distillation residues obtained in the manufacture of aromatic diisocyanates, said process comprising the steps of (1) adding a solution of the still residues, in an inert organic solvent such as orthodichlorobenzene, to aqueous hydrochloric or hydrobromic acid at about 25 to 150° C. so that isocyanates, biurets and carbodiimides present in said residues are at least partially hydrolyzed, (2) phosgenating the resulting mixture at about 150 to 200° C. in

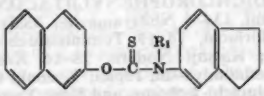
the presence of less than 10% by weight of water based on the weight of still residues and (3) recovering aromatic diisocyanate from the phosgenated mixture.

3,636,031
ANTIOXIDANT SYSTEM FOR POLYOLEFINS
William O. Drake and Kenneth R. Mills, Bartlesville, Okla., assignors to Phillips Petroleum Company
Continuation-in-part of application Ser. No. 570,459, Aug. 5, 1966. This application July 24, 1969, Ser. No. 844,642
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.8 N 12 Claims

A stabilizer system for poly 1-olefins comprising an organic phosphite ester, a thioester, 2,6-di-tert-butyl-4-methylphenol, and 4,6-di(4-hydroxy-3,5-di-tert-butylphenoxy)-2-octylthio-1,3,5-triazine.

3,636,032
INDANE DERIVATIVES OF THIOCARBAMIC ACIDS
Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Filed Aug. 6, 1968, Ser. No. 750,486
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A 3 Claims

This invention relates to new indane derivatives of substituted thiocarbamic acids, more particularly, those having the formula



wherein R_1 is hydrogen or lower alkyl. These new compounds are useful as antifungal agents.

3,636,033
ADDITION PRODUCT OF AN α,β-UNSATURATED ESTER AND A THIOCARBOXYLIC ACID
Eduard K. Kleiner, New York, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.
No Drawing. Filed Feb. 27, 1969, Ser. No. 803,115
Int. Cl. C07c *153/07*
U.S. Cl. 260—455 C 14 Claims

Organic materials, particularly synthetic polymers such as polypropylene, are protected against oxidation in air, thermal degradation or deterioration by including, in such substances, a stabilizing amount of an antioxidant. The antioxidant is obtained by reacting (a) an α,β-unsaturated ester of a hindered hydroquinone and (b) a thio acid.

3,636,034
SURFACTANT PRODUCTION VIA RHODIUM-CATALYZED OXO PROCESS
Yoshio Ohsumi, Yoshiki Matsunaga, Mitsuo Yamaguchi, Hiroshi Ishida, Takeshi Onoda, and Masaru Onishi, Tokyo, Hiroshi Kasugai, Yokohama-shi, and Tadao Namiki, Kawasaki-shi, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan
No Drawing. Filed Sept. 27, 1965, Ser. No. 490,697
Claims priority, application Japan, Oct. 2, 1964, 39/55,911
Int. Cl. C07c *141/04*
U.S. Cl. 260—459 1 Claim

A surface active composition comprising salts of high molecular weight alkyl sulfate. The salts are obtained by reacting one or more mono-olefins having 10 to 24 carbon atoms with carbon monoxide and hydrogen in the presence of a rhodium catalyst. The resultant product is hydrogenated to form high molecular weight alcohols and these are sulfated followed by neutralization of the resultant sulfation products by certain bases.

3,636,035
STABILIZED MOULDING COMPOSITIONS FROM POLYMERS OF α-OLEFINS
Otto Mauz, Niederhofheim, Taunus, and Eberhard Prinz, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
No Drawing. Filed July 7, 1969, Ser. No. 839,712
Claims priority, application Germany, July 10, 1968, P 17 69 764.2
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.95 4 Claims

Moulding compositions from polyolefins and a stabilizer mixture which is difficult to extract by boiling water consisting of a phosphorus containing bisphenol and a disulfide.

3,636,036
ALKYL SUBSTITUTED PHENYLENE DIISONITRILES
Ivar Ugi, 3611 McLaughlin Ave., Los Angeles, Calif. 90066
No Drawing. Application Sept. 26, 1966, Ser. No. 588,656, which is a continuation of application Ser. No. 264,707, Mar. 12, 1963. Divided and this application Feb. 11, 1970, Ser. No. 10,603
Int. Cl. C07c *119/02*
U.S. Cl. 260—465 H 2 Claims

1-methyl-3,5-diethyl-2,4-phenylene-diisonitrile, and 2,4,6-triisopropyl-1,3-phenylene-diisonitrile. The compounds are useful as cross-linking and hardening agents for plastics which contain carboxyl groups.

3,636,037
CARBONIC ESTERS OF 4-NITROPHENOL
Cyril Donninger and John A. Schofield, Kent, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 2, 1969, Ser. No. 829,786
Claims priority, application Great Britain, June 4, 1968, 26,573/68; Jan. 24, 1969, 4,080/69
Int. Cl. A01n *9/20*; C07c *79/32, 79/34*
U.S. Cl. 260—463 8 Claims

Herbicidally active carbonic esters of 2-substituted-4-nitro-6-halophenols and methods for their preparation.

3,636,038
4'-CYANO-5-HALO-3-PHENYLSALICYLANILIDES
Jack D. Early, Bethesda, and John P. Chupp, Kirkwood, Md., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Original application Aug. 8, 1967, Ser. No. 659,040, now Patent No. 3,525,766, dated Aug. 25, 1970. Divided and this application July 28, 1969, Ser. No. 860,458
Int. Cl. C07c *121/74*
U.S. Cl. 260—465 D 3 Claims

Compounds characterized by a 5-halo-3-phenylsalicylanilido nucleus, the anilido group of which having substituents of the group nitro, cyano and trifluoromethyl. These compounds are useful as gastropodicides.

3,636,039
SUBSTITUTED BENZYLIMIDAZOLIDINONES
Vsevolod Gruenman, Montclair, and Max Hoffer, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Continuation-in-part of application Ser. No. 725,946, May 1, 1968. This application Feb. 24, 1970, Ser. No. 13,769
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.7 14 Claims

The present disclosure relates to novel benzylimidazolidinones, with special reference to the 4-(substituted benzyl)-2-imidazolidinones, methods for their preparation and

novel intermediates useful therein. The benzylimidazolidinones are useful as hypotensive agents.

3,636,040

COMPLEX COMPOUNDS OF THE COBALT-PHTHALOCYANINE SERIES

Heinrich Vollmann, Leverkusen, and Peter Mertens, Cologne, Marienburg, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,826
Claims priority, application Germany, Aug. 31, 1968, F 53,375
Int. Cl. C09b 47/04
U.S. Cl. 260—314.5 16 Claims

Coordinatively hexavalent complex salts of trivalent cobalt, in which four of the six coordination points at the cobalt atom are occupied by the phthalocyanine ring system which has a double negative charge, and each of the remaining two points is occupied by an amine and process for preparing said complex salts comprising treating cobalt-phthalocyanines with an oxidizing agent in the presence of an anion and with an amine. The complex salts can be used as dyestuffs for lacquers, synthetic materials and pastes for ball point pens.

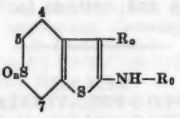
3,636,041

4,5-DIHYDRO-7H-THIENO[2,3-c]THIOPYRANS

Paul Schmidt and Kurt Eichenberger, Therwil, and Ernst Schweizer, Basel, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,250
Claims priority, application Switzerland, Feb. 29, 1968, 2,980/68; Aug. 9, 1968, 12,029/68; Jan. 21, 1969, 836/69
Int. Cl. A61k 27/00; C07d 65/04
U.S. Cl. 260—332.2 C 15 Claims

Compounds of the formula



in which R_x stands for acyl or hydrogen, R_0 for a free or functionally converted carboxyl group and *n* for 0, 1 or 2, and which contain in at least one of the positions 5 and 7 an aryl radical and which may be further substituted in positions 4, 5 and/or 7 are useful as starting materials and as central inhibiting, antiinflammatory and antihypertensive agents.

3,636,042

PROCESS FOR THE PREPARATION OF OXOPYRROLES AND INTERMEDIATES USEFUL THEREIN

Irwin J. Pachter, Woodbury, and Karl Schoen, Kew Gardens, N.Y., assignors to Endo Laboratories Inc., Garden City, N.Y.

No Drawing. Application Sept. 1, 1967, Ser. No. 664,942, which is a continuation-in-part of applications Ser. No. 575,303, Aug. 26, 1966, and Ser. No. 599,387, Dec. 6, 1966. Divided and this application July 16, 1968, Ser. No. 768,569
Int. Cl. C07d 27/26
U.S. Cl. 260—326.1 14 Claims

Process for preparing 2-aminoalkyl pyrrol-3-yl ketones and derivatives thereof, and novel compounds thus produced. The process is carried out by quaternizing 2-dimethylamino- or 2-piperidino-alkyl-pyrrol-3-yl ketones or derivatives thereof, including those having bi- and tricyclic nuclei, and reacting the quaternary salts either with a base and an amine, or, alternatively, with an amine only.

3,636,043

METHOD FOR THE PREPARATION OF 4-ALKYLPROLINES AND COMPOUNDS PRODUCED THEREBY

Barney J. Magerlein, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,558
Int. Cl. C07d 27/04
U.S. Cl. 260—326.3 7 Claims

4 - alkylprolines are prepared in relatively high yields by reacting a 2-alkylacrolein with a dialkyl N-alkanoylamidomalonate, dehydrating the obtained 4-alkylpyrrolidine, and thereafter hydrolyzing, decarboxylating, and catalytically hydrogenating the produced 4-alkyl-4-pyrroline. The 4-alkyl-prolines are useful as intermediates for the preparation of 4-alkylhygric acids which, in turn, are a source of component acids that are reacted with amino sugars to form antibiotics of the lincomycin type.

3,636,044

N-(3′,5′-DICHLOROPHENYL)ITACONIMIDE

Akira Fujinami, 134–4 Nishiyamacho, Ashiya-shi, Japan; Fukashi Horiuchi, 18–19 Tominosatocho, Takatsuki-shi, Japan; Katsuji Nodera, 28–16 Koshienguchi-3-chome, Nishinomiya-shi, Japan; Toshiaki Ozaki, 11–14 Sonehigashimachi-2-chome, and Sigeo Yamamoto, 149–24 Honmachi-9-chome, both of Toyonaka-shi, Japan; and Tadashi Ooishi, 9–17 Sakuragaoka-4-chome, Minoo-shi, Japan

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,157
Int. Cl. C07d 27/10
U.S. Cl. 260—326.5 1 Claim

A novel compound, N-(3′,5′ - dichlorophenyl)itaconimide is less phyto-toxic as well as harmless to mammals and has a peculiarly conspicuous fungicidal activity. The novel compound can readily be prepared by dehydrating N-(3′,5′-dichlorophenyl)itaconic acid monoamide. A fungicidal composition containing N-(3′,5′-dichlorophenyl)itaconimide as an active ingredient have prominent preventive and exterminative effects on such fungi as *Pyricularia oryzae* Cav., *Cochliobolus miyabeanus, Pellicularia sasakii*, Sclerotinia, *Aspergillus niger* and the like.

3,636,045

THIEPINO AND OXEPINO[4,5-c]PYRROL DERIVATIVES

Hans Blattner and Walter Schindler, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,175
Claims priority, application Switzerland, Nov. 27, 1968, 17,644/68
Int. Cl. C07d 27/36
U.S. Cl. 260—326.5 7 Claims

Substituted 2,3 - dihydro-1H-dibenzo[2,3:6,7]thiepino [4,5-c]pyrrols, the corresponding oxepino derivatives and the pharmaceutically acceptabe acid addition salts thereof have a central nervous system depressant effect; the compounds can be prepared by reacting 10,11-bis-bromomethyldibenzo[b,f]thiepins or the corresponding oxepins with primary amines; the pyrrols and the pharmaceutically acceptable acid addition salts thereof are the active ingredients of pharmaceutical compositions; an illustrative embodiment is 2-ethyl - 2,3 - dihydro-1H-dibenzo-[2,3:6,7]thiepino[4,5-c]pyrrol.

3,636,046

DERIVATIVES OF DIBENZO[b,f]PYRROLO[3,4-d]AZEPINE

Hans Blattner and Walter Schindler, Riehen, Switzerland; Herr Dr. Leonhard Gysin, executor and legal representative of said Walter Schindler, deceased, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,177
Claims priority, application Switzerland, Dec. 19, 1968, 18,946/68
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.9 6 Claims

Compounds of the class of 1,2,3,8-tetrahydro-dibenzo [b,f]pyrrolo[3,4-d]azepines and pharmaceutically acceptable acid addition salts thereof have a depressant effect on the central nervous system; they can be prepared from N-substituted 10,11-bis-bromomethyl-5H-dibenz[b,f]azepines and a primary amine; the compounds are active ingredients of pharmaceutical compositions; an illustrative embodiment is 2-ethyl-1,2,3,9-tetrahydro-dibenzo[3,4-d]azepine.

3,636,047

KETONE DERIVATIVES OF 1,4-BENZODITHIAN AND 1,4-BENZOXATHIAN

Michel Tobias, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Nov. 29, 1968, Ser. No. 780,185
Int. Cl. C07d *13/00, 89/14*
U.S. Cl. 260—327 P 4 Claims

5,6,7,8 - tetrahydro - 8 - oxo - 1,4 - benzodithian and 5,6,7,8 - tetrahydro - 8 - oxo - 1,4 - benzoxathian are prepared by base-catalyzed reaction of 2 - halo - 2 - cyclohexen - 1 - one or 2,3-epoxycyclohexanone with a dimercaptoalkane or a mercaptoalcohol. They are dehydrogenated to the corresponding phenol and converted to N-methylcarbamates, which have insecticidal activity.

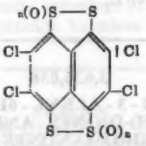
3,636,048

CHLORONAPHTHO DITHIOLE COMPOUNDS AND A METHOD FOR THEIR PREPARATION

Erwin Klingsberg, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 701,120, Jan. 29, 1968. This application July 15, 1970, Ser. No. 55,287
Int. Cl. C07d *71/00;* C07c *25/22*
U.S. Cl. 260—327 C 7 Claims

A new class of chloronaphtho dithiole compounds is provided which are particularly useful as yellow colorants in plastics and as intermediates for the preparation of dielectric materials. The compounds are represented by the following formula:



wherein *n* is an integer from 0 to 2. Furthermore, a new yellow pigment is provided which consists essentially of 3,4,7,8 - tetrachloronaphtho[1,8 - cd:4,5c'd']bis(1,2 - dithiole).

3,636,049

ISOTHIOCHROMAN CARBOXAMIDES

James M. McManus, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,396
Int. Cl. C07d *65/04*
U.S. Cl. 260—327 TH 13 Claims

A series of novel 4-oxo-isothiochroman-3-carboxamide 2,2-dioxides have been prepared, including their pharmaceutically acceptable salts. These compounds are useful in therapy as non-steroidal anti-inflammatory agents. Alternate methods of preparation are provided and some of these synthetic routes are described in detail.

3,636,050

N-BENZOTHIENYLCHLOROACETAMIDES

Patrick R. Driscoll, Fords, and Harold A. Kaufman, Piscataway, N.J., assignors to Mobil Oil Corporation

No Drawing. Original application Feb. 7, 1968, Ser. No. 703,567, now Patent No. 3,495,967, dated Feb. 17, 1970. Divided and this application Oct. 10, 1969, Ser. No. 870,773
Int. Cl. C07d *63/72*
U.S. Cl. 260—330.5 2 Claims

N-benzothienyl-2-chloroacetamide and ring- and N-substituted derivatives thereof are new compounds that are herbicides, particularly as pre-emergent herbicides.

3,636,051

PROCESS FOR PURIFICATION OF DICYCLOPENTADIENE DIEPOXIDE

Rudolph Rosenthal, Broomall, and Joseph A. Kieras, Lincoln University, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,082
Int. Cl. C07d *1/06*
U.S. Cl. 260—348 C 10 Claims

Dicyclopentadiene diepoxide prepared by the epoxidation of dicyclopentadiene with tertiary butyl hydroperoxide or tertiary amyl hydroperoxide in the presence of a molybdenum catalyst contains small amounts of carbonyl compounds which interfere with the subsequent use of this material as an intermediate in the preparation of polyethers by giving highly colored undesirable products. The carbonyl compounds are removed from dicyclopentadiene diepoxide in this process by one or more recrystallizations of the compound from a mixture of a ketone and a paraffinic hydrocarbon solvent.

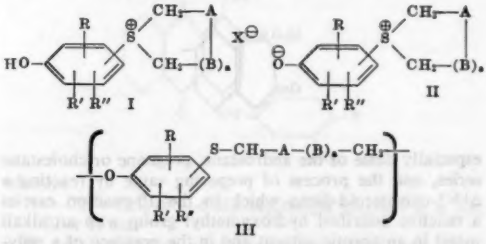
3,636,052

HYDROXYARYLPOLYMETHYLENESULFONIUM ZWITTERIONS

Melvin J. Hatch, Socorro, New Mexico, and Masao Yoshimine, Hugh B. Smith, and Donald L. Schmidt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 15, 1969, Ser. No. 866,763
Int. Cl. C07d *63/04, 65/00*
U.S. Cl. 260—332.3 R 20 Claims

Hydroxyarylpolymethylenesulfonium salts of Formula I, prepared by condensation of a phenol and a polymethylenesulfide, can be converted into a sulfonium hydroxide inner salt II and then thermally polymerized to yield polymers containing a plurality of groups of Formula III:



These polymers and copolymers are useful water resistant thermoplastic resins and impregnants.

3,636,053

PREPARATION OF 2,3,4,5-TETRAHYDROOXEPIN

Donald A. Tyssee, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,317

Int. Cl. C07d 9/00

U.S. Cl. 260—333 6 Claims

2,3,4,5-tetrahydrooxepin is prepared in high yields of contacting tetrahydropyran-2-methanol in the gaseous state with at least one of a certain group of catalysts, e.g. silica-alumina catalyst, at a temperature above about 150° C. 2,3,4,5-tetrahydrooxepin is a useful reactant for the preparation of vinyl ether polymers or copolymers. Also, 2,3,4,5-tetrahydrooxepin may be reduced to oxepane, the corresponding saturated cyclic ether, which possesses good solvent properties.

3,636,054

(4,4-DIALKOXY-2,5-CYCLOHEXADIENYLIDENE) MALONONITRILES

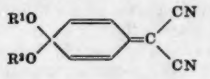
Brian R. O'Connor, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 25, 1968, Ser. No. 762,605

Int. Cl. C07d 13/04, 15/04

U.S. Cl. 260—340.7 3 Claims

Described and claimed are the novel (4,4-dialkoxy-2,5-cyclohexadienylidene)malononitriles and their derivatives of the formula



wherein R^1 and R^2 together are alkylene of 2–3 carbon atoms.

The compounds of this invention are useful as foliar fungicides.

3,636,055

4-OXO-19-NOR-A-HOMO-STEROID DIENES AND A PROCESS FOR THEIR MANUFACTURE

Georg Anner, Basel, and Peter Wieland, Oberwil, Basel-Land, Switzerland, assignors to Ciba Corporation, Summit, N.J.

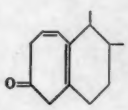
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,256

Claims priority, application Switzerland, Nov. 30, 1967, 16,861/67; June 25, 1968, 17,887/68

Int. Cl. C07d 13/04

U.S. Cl. 260—340.9 17 Claims

Compounds of the partial formula



especially those of the androstane, pregnane or cholestane series, and the process of preparing same by reacting a $\Delta^{1,4}$-3-oxo-steroid-diene which in the 10-position carries a reactive esterified hydroxymethyl group with an alkali metal in an aprotic solvent and in the presence of a polycyclic aromatic hydrocarbon and isomerizing the resulting 4-oxo-19-nor-A-homo-2,5(10)-diene.

Use: As intermediates for the manufacture of the known, highly-active 4-oxo - 19 - nor - A - homo-steroid-1(10)-2,4a-trienes.

3,636,056

2,6-DISUBSTITUTED-9-OXABICYCLONONANES AND METHODS OF PREPARING SAME

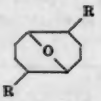
John M. Larkin, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,946

Int. Cl. C07d 7/18

U.S. Cl. 260—345.1 14 Claims

There is provided 2,6-disubstituted-9-oxabicyclononanes of the formula:



where R is NO_2, =O or NH_2 and where R^1 is ONO_2 or OH. The compounds have utility as rust inhibitors, cetane improvers and anti-icing compounds in fuel compositions.

3,636,057

COLOR STABILIZER FOR MALEIC ANHYDRIDE

Jesse Wehrman, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,088

Int. Cl. C07c 57/14

U.S. Cl. 260—346.8 20 Claims

High temperature color stable maleic anhydride can be obtained by adding trace amounts, i.e., 50–2000 p.p.m. of an hydrocarbyl thiophosphate of the structure

to the maleic anhydride where R is a hydrocarbon radical having 1 to 15 carbon atoms. For example maleic anhydride containing 560 p.p.m. of triethyl thiophosphate maintained at 140° for 24 hours had a color of 10–15 (Hazen) whereas unstabilized maleic anhydride had a color of 300+(Hazen).

3,636,058

7,10 - DIHYDRO - 3 - ALKYL - 6H - DIBENZO[b,d] PYRAN-6,9(8H)-DIONES AND 5-HYDROXY-7-ALKYL-4-CHROMANONES

Kenneth Earl Fahrenholtz, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Mar. 25, 1966, Ser. No. 537,298, now Patent No. 3,507,885, dated Apr. 21, 1970. Divided and this application Mar. 13, 1969, Ser. No. 807,094

Int. Cl. C07d 7/24, 7/32

U.S. Cl. 260—343.2 R 5 Claims

7,10-dihydro - 3 - alkyl-6H-dibenzo[b,d]pyran-6,9(8H)-diones which are intermediates for the pyschotropic and analgesic 3-alkyl - 9 - hydrocarbyl(idene) - 6H - dibenzo [b,d]pyrans. 5-hydroxy-7-alkyl-4-chromanones are alternate pathway intermediates in the production of the final product dibenzo[b,d]pyrans.

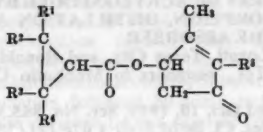
3,636,059

CYCLOPENTENOLONE ESTERS

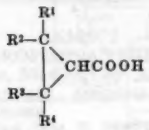
Masanao Matsui, Tokyo, Takeshi Kitahara, Yono-shi, Keimei Fujimoto, Kyoto, and Yositosi Okuno, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed July 17, 1967, Ser. No. 653,684
Claims priority, application Japan, July 20, 1966, 41/47,882
Int. Cl. C07c *64/74, 69/76*
U.S. Cl. 260—347.4 12 Claims

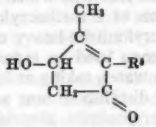
Novel cyclopropanecarboxylic acid esters of the formula,



wherein R^1 is hydrogen, lower alkyl having 1 to 4 carbon atoms, phenyl, lower alkyl having 1 to 4 carbon atoms-substituted phenyl, or lower alkoxy having 1 to 4 carbon atoms-substituted phenyl, R^2, R^3 and R^4 are lower alkyls having 1 to 4 carbon atoms, and R^5 is lower alkyl having 1 to 4 carbon atoms, lower alkenyl having 1 to 4 carbon atoms, cycloalkenyl having 5 to 6 carbon atoms, aralkyl having 6 to 9 carbon atoms, alkadienyl group of 5 carbon atoms or furfuryl. These novel esters are prepared by esterifying a cyclopropanecarboxylic acid having the formula,



wherein R^1, R^2, R^3 and R^4 have the same meanings as above, or its reactive derivative, with a cyclopentenolone compound having the formula,



wherein R^5 has the same meanings as above. These esters are useful as an insecticide harmless to warm-blood animals.

3,636,060

PROCESS FOR GLYCIDYL 2,2-DINITRO-2-FLUOROETHOXIDE

Milton B. Frankel, Tarzana, Edward F. Witucki, Sepulveda, and Ronald Rushworth, Reseda, Calif., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Mar. 4, 1970, Ser. No. 19,147
Int. Cl. C07d *1/18*
U.S. Cl. 260—348.6 5 Claims

Epibromohydrin is reacted with 2,2-dinitro-2-fluoroethanol in a one step process to produce glycidyl 2-dinitro-2-fluoroethoxide (GDNFE). The conditions of the reaction prevent the formation of 1,3-bis-(2,2-dinitro-2-fluoroethoxy)-2-propanol, a by-product ordinarily formed in GDNFE preparations, which is difficult to separate from GDNFE. GDNFE is useful as a binder for explosive and propellant formulations.

3,636,061

PROCESS FOR THE PREPARATION OF EPOXYPHOSPHONATES

Richard J. Turley, Derby, Conn., assignor to Olin Corporation

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,926
Int. Cl. C07f *9/38*
U.S. Cl. 260—348 7 Claims

An improved method for preparing 1,2-epoxyalkyl phosphonates useful for flame retardants in plastics, especially polyurethanes, condenses dialkyl phosphites with alpha-haloketones using alkali metal alcoholates in lower aliphatic alcohols as reagent.

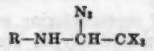
3,636,062

N-(1-AZIDO-2,2,2-TRIHALOETHYL) AZIDES AND CARBAMATES

Malcolm S. Singer, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 7, 1969, Ser. No. 789,595
Int. Cl. C07c *117/00;* C07d *109/00*
U.S. Cl. 260—349 5 Claims

Azides of the formula:



in which X is Cl or Br and R is a carboxyacyl, sulfonylacyl or alkoxycarbonyl group. These azides are nematocidal.

3,636,063

6-METHYL-1,3,10,11-TETRAHYDROXYNAPHTHACENE-2-CARBOXAMIDE-5,12-QUINONE

Jerry Robert Daniel McCormick, Spring Valley, and Nancy Hazlett Arnold, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 19, 1969, Ser. No. 851,487
Int. Cl. C07c *103/26*
U.S. Cl. 260—365 1 Claim

This disclosure describes 6-methyl-1,3,10,11-tetrahydroxynaphthacene - 2 - carboxamide - 5,12 - quinone useful as an intermediate for the preparation of 6-methyl-1,3,10,11,12-pentahydroxynaphthacene-2-carboxamide.

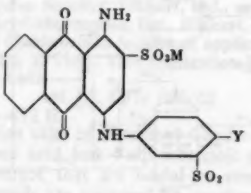
3,636,064

ANTHRAQUINONE REACTIVE DYES

Seiji Hotta, Minoo-shi, Tomio Nakano, Takarazuka-shi, Hirohito Kenmochi, Toyonaka-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,900
Int. Cl. C09b *1/34*
U.S. Cl. 260—374 4 Claims

Clear reddish blue or greenish blue anthraquinone reactive dyes,



wherein

X:—CH=CH$_2$ or —CH$_2$CH$_2$OSO$_3$M wherein M is Na, K or H and

Y: an alkyl group, an alkoxy group, a hydroxy group, a halogen atom, an acylamino group or an alkylamino group.

3,636,065

WATER-INSOLUBLE ANTHRAQUINONE DYESTUFFS

Jéan-Frederic Guye-Vuillème, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed June 12, 1968, Ser. No. 736,249
Claims priority, application Switzerland, June 21, 1967, 8,817/67
Int. Cl. C09b 1/50
U.S. Cl. 260—376 6 Claims

1,5 - dihydroxy - 4,8 - diamino - 2 - phenyl-anthraquinones carrying in p-position at the phenyl residue an acyloxy group of a sulfur- or nitrogen-containing carbonic acid derivative.

3,636,066

PROCESS FOR THE MANUFACTURE OF ACRYLONITRILE BY AMMOXIDATION

Keisho Yamada, Shigeki Nagai, Kyoji Odan, Yasuo Nakamura, and Mikio Hidaka, Ube-shi, Japan, assignors to Ube Industries, Ltd., Ube-shi, Japan

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,655
Int. Cl. C07c 121/02
U.S. Cl. 260—465.3 3 Claims

In the process of manufacturing acrylonitrile wherein propylene, ammonia and oxygen are contacted with a solid oxidizing catalyst in the vapor phase at a temperature in the range of 400–600° C., the improved method which comprises using as said solid catalyst that which consists essentially of

(A) a bismuth antimonate in which the atomic ratio of bismuth to antimony is 1:1, and
(B) an oxide of a metal selected from the group consisting of tungsten, uranium, molybdenum, vanadium, tin and iron;

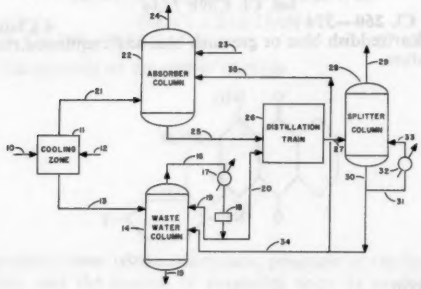
the weight ratio of said bismuth antimonate to said oxide being in the range of 95:5–50:50.

3,636,067

PURIFICATION OF ACRYLONITRILE BY ABSORPTION, PLURAL DISTILLATION AND RECYCLE OF BOTTOMS STREAM TO THE ABSORBER

Gordon H. Lovett, Texas City, and Ronald E. Rambin, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 10, 1969, Ser. No. 865,314
Int. Cl. B01d 3/40; C07c 121/32
U.S. Cl. 260—465.3 8 Claims



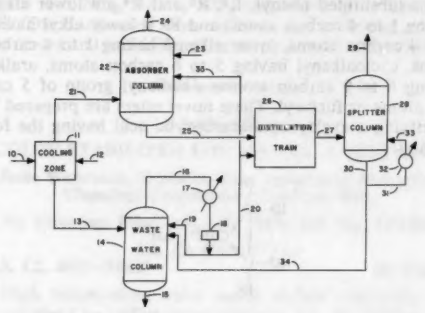
A process for the reduction of the methacrylonitrile content of product acrylonitrile which comprises introducing at least a portion of a bottom fraction from an acrylonitrile heavy ends splitter column into an absorbing column, taking overhead from said absorbing column a fraction containing at least part of the methacrylonitrile, taking a bottom fraction from the absorbing column, removing the absorbing solvent from the bottom fraction and returning the acrylonitrile in the bottom fraction to the acrylonitrile heavy ends splitter column.

3,636,068

PURIFICATION OF ACRYLONITRILE BY QUENCHING, ABSORPTION, DISTILLATION AND RECYCLE TO THE ABSORBER

Gordon H. Lovett, Texas City, and Ronald E. Rambin, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 10, 1969, Ser. No. 865,315
Int. Cl. B01d 3/40; C07c 121/32
U.S. Cl. 260—465.3 10 Claims



A process for the reduction of the methacrylonitrile content of product acrylonitrile which comprises introducing at least a portion of a methacrylonitrile rich bottom fraction from an acrylonitrile-heavy ends splitter column into a distillation zone used to separate low-boiling organic material from water, taking at least a portion of the overhead from said distillation zone and introducing said fraction into an acrylonitrile absorbing column, taking overhead from said absorbing column a fraction containing at least a part of the methacrylonitrile, taking a bottom fraction from the absorbing column, removing the absorbing solvent from the bottom fraction and returning the acrylonitrile in the bottom fraction to the acrylonitrile-heavy ends splitter column.

3,636,069

CERTAIN NOPINOL DERIVATIVES

Thomas W. Gibson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Dec. 16, 1966, Ser. No. 602,141, now Patent No. 3,522,276, dated July 28, 1970. Divided and this application Dec. 11, 1969, Ser. No. 889,777
Int. Cl. C07c 77/02, 81/02, 131/02
U.S. Cl. 260—466 1 Claim

The synthesis of the novel intermediates, cis-2-nopinyl nitrite, 8-nitroso-cis-nopinol dimer and 8-oximino-cis-nopinol, and the final product, 1-methyl-2-hydroxy-3-oxatricyclo[5.2.0.0^{4,9}] nonane, useful as a perfume, is disclosed.

3,636,070

VINYL ESTER AMIDE OF PINIC ACID

Glen W. Hedrick, Lake City, Fla., and Frank C. Magne, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application June 20, 1967, Ser. No. 647,343, now Patent No. 3,544,529, dated Dec. 1, 1970. Divided and this application Aug. 6, 1969, Ser. No. 870,851

Int. Cl. C07c *103/86*

U.S. Cl. 260—468 R 1 Claim

This invention relates to some vinyl ester amides of pinic acid, methods for preparing same and to certain copolymers thereof. More particularly, this invention relates to the preparation of vinyl 2,2-dimethyl-3-morpholinocarbonylcyclobutane acetate, vinyl 2,2-dimethyl-3-piperidinocarbonylcyclobutane acetate, and vinyl 2,2-dimethyl-3-di-n-butylaminocarbonylcyclobutane acetate by selective amination followed by vinyl interchange and the preparation of several vinyl chloride copolymers derived therefrom.

3,636,071

ETHERS CONTAINING A HYDROPHENANTHRENE NUCLEUS

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Oct. 26, 1966, Ser. No. 589,494

Int. Cl. C07c *69/76*

U.S. Cl. 260—468.5 7 Claims

Ethers of tetrahydro, hexahydro, and octahydrophenanthrene and derivatives thereof.

3,636,072

NOVEL HYDROPHENANTHRENE ESTERS

Alexander D. Cross, Mexico City, Mexico, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Sept. 7, 1967, Ser. No. 665,951

Int. Cl. C07c *69/76, 69/00*

U.S. Cl. 260—468.5 9 Claims

Bicyclo[2.2.2]octane - 1 - carbonyloxy, bicyclo[2.2.2]octane - 1 - carbonyloxymethyl, bicyclo[2.2.2]octane - 1-methyleneoxycarbonyl, bicyclo[2.2.2]octane - 1 - methylenecarbonate, bicyclo[2.2.2]octane - 1 - methylenecarbonyldioxymethyltricyclo[3.3.1.1^{1,5}]decane - 1 - methylenecarbonate, and tricyclo[3.3.1.1^{1,5}]decane - 1 - methylenecarbonyldioxymethyl esters of tetrahydro-, hexahydro-, and/or octahydrophenanthrenes which esters are useful for their long-acting anti-fertility and estrogenic activity and processes for the preparation of these novel esters.

3,636,073

[4-(2-CYANOVINYL)PHENOXY]ACETIC ACIDS

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 3, 1967, Ser. No. 650,648

Int. Cl. A61k *27/00*; C07c *121/74*

U.S. Cl. 260—465 D 6 Claims

[4-(1-alkenyl)phenoxy]alkanoic acid products substituted at the 2-carbon of the alkene chain by one or more radicals selected from cyano, carboxy, alkoxycarbonyl, sulfamoyl, carbamoyl, alkylsulfonyl and arylsulfonyl. The said products are diuretic and saluretic agents which can be used in the treatment of conditions associated with electrolyte and fluid retention. The products of this invention are obtained by treating a nuclear alkanoyl substituted phenoxyalkanoic acid or an ester derivative thereof with a reagent which is capable of replacing the oxygen atom of the alkanoyl group by an alkylidene radical. Suitable reagents include, for example (substituted methylene) triphenylphosphorane and reactive methylene compounds.

3,636,074

NOVEL MERCAPTOPHENOL DERIVATIVES

Emil J. Geering, Grand Island, and Norman W. Dachs, Buffalo, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Aug. 5, 1968, Ser. No. 749,954

Int. Cl. C07c *149/40*

U.S. Cl. 260—470 17 Claims

There are described novel hydroxyarylthio ethylene and ethane derivatives containing in the position β to the hydroxyarylthio radical a cyano, nitro, aromatic, carbonyl, sulfonyl, sulfinyl, phosphinyl or phosphinothioyl radical. A process for the preparation of said compositions, their pesticidal utility and pesticidal carbamate and phosphorothioate derivatives are also described.

3,636,075

LOWER ALKYL α-(DI-LOWER ALKYLSULFAMOYL)-α-PHENYLALKANOIC ACID ESTERS

Bernard Loev, Broomall, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Nov. 13, 1969, Ser. No. 876,575

Int. Cl. C07c *143/78*

U.S. Cl. 260—470 3 Claims

The compounds are lower alkyl α-(di-lower alkylsulfamoyl)-α-phenylalkanoic acid esters having antidepressant activity.

3,636,076

N - FLUORODICHLOROMETHYLMERCAPTO - N-TRIFLUOROMETHYL - AMINO - BENZOIC ACID PHENYL ESTERS

Engelbert Kuhle, Berg-Gladbach, Erich Klauke, Odenthal-Hahnenberg, Brigitte Hamburger, Cologne, and Fritz Steinfatt, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 24, 1970, Ser. No. 22,363

Claims priority, application Germany, Apr. 6, 1969, P 19 19 180.1

Int. Cl. C07c *149/20*

U.S. Cl. 260—470 10 Claims

N - trihalogenmethylmercapto - N - trifluoromethylamino-benzoic acid phenyl esters, i.e. (optionally methyl, (trifluoromethyl, methoxy, chloro or nitro - substituted)-(N - trihalogenmethylmercapto-N-trifluoromethyl-amino)-benzoic acid (carboxy and alkoxycarbonyl-substituted)-phenyl esters, which possess pesticidal, especially antimicrobial, properties and which may be produced by conventional methods.

3,636,077

ACID ADDITION SALTS OF 5-BENZOYL-4-HYDROXY - 2 - METHOXYBENZENESULFONIC ACID AND 4-AMINOBENZOIC ACID ESTER AND DERIVATIVES THEREOF

Dale Adrian Stauffer, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation-in-part of application Ser. No. 702,537, Feb. 2, 1968. This application Dec. 17, 1968, Ser. No. 784,473

Int. Cl. C07c *101/62*

U.S. Cl. 260—471 R 3 Claims

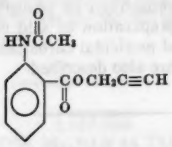
Acid addition salts of 5-benzoyl-4-hydroxy-2-methoxybenzenesulfonic acid and 4-aminobenzoic acid and ester derivatives thereof that are useful as sunscreen agents. These compounds are prepared by reacting 2-hydroxy-4-methoxybenzophenone with a halosulfonic acid to form an intermediate arylsulfonic acid and reacting the intermediate sulfonic acid with a lower alkyl 4-aminobenzoate to form a salt. If desired, these compounds may be hydrolyzed to form 4-carboxyphenylammonium 5-benzoyl-4-hydroxy-2-methoxybenzenesulfonate.

3,636,078
2-PROPYNYL ESTER OF N-ACETYL ANTHRANILIC ACID

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,599
Int. Cl. C07c *103/32*
U.S. Cl. 260—471 R 1 Claim

The present invention is a new compound, namely the 2-propynyl ester of N-acetyl anthranilic acid corresponding to the formula:



The compound is suitable for use as a herbicide.

3,636,079
METHYL N-(3-CHLORO-4-BROMO PHENYL) CARBAMATE

Karl-Heinz Koenig, Ludwigshafen (Rhine), and Adolf Fischer, Mutterstadt, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,546
Claims priority, application Germany, Apr. 6, 1967, P 16 42 221.2
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 1 Claim

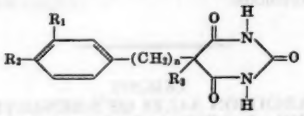
Substituted methyl N-phenylcarbamates and a method for controlling unwanted plants with said compounds.

3,636,080
SUBSTITUTED PHENYLMALONIC ACID AND PHENYLALKYL MALONIC ACID ESTERS

Arnold Brossi, Verona, Antonino Focella, Clifton, Albert Israel Rachlin, Verona, and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Feb. 27, 1967, Ser. No. 619,030, now Patent No. 3,464,990, dated Sept. 2, 1969. Divided and this application Apr. 10, 1969, Ser. No. 815,230
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R 2 Claims

Barbituric acid derivatives of the formula



wherein R_1 and R_2 are hydroxy, lower alkoxy or aralkoxy; R_3 is hydrogen, lower alkyl, lower alkenyl or lower alkynyl; and n is an integer from 0 to 2, are prepared, from correspondingly substituted diethyl(phenyl)malonates. The products are useful as tranquilizers.

3,636,081
2-FORMYL-3,5-DISUBSTITUTED TEREPHTHALATE ESTERS

Jerry Robert Daniel McCormick, Spring Valley, and Nancy Hazlett Arnold, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 19, 1969, Ser. No. 851,442
Int. Cl. C07c *69/82*
U.S. Cl. 260—473 R 9 Claims

This disclosure describes 2-formyl-3,5-disubstituted terephthalate esters useful as intermediates for the preparation of 6 - methyl-1,3,10,11,12-pentahydroxynaphthacene-2-carboxamide.

3,636,082
CARBONYLATION OF ORGANIC HALIDES WITH METALLIC ALCOHOLATES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,944
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 R 7 Claims

Organic esters are prepared by reacting an organic halide, an alkali or alkaline earth alcoholate and carbon monoxide at elevated temperature and pressure, in the presence of a palladium catalyst and carbon dioxide.

3,636,083
POLYMERIZABLE DERIVATIVE OF NITRILOTRIACETIC ACID

Edward D. Weil, Yonkers, and Walter Stamm, Tarrytown, N.Y., and Stanley B. Mirviss, Stamford, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 10, 1968, Ser. No. 696,705
Int. Cl. C07c *101/20*
U.S. Cl. 260—482 P 1 Claim

A polymerizable composition of matter having the formula:

$$N[CH_2COOR]_3$$

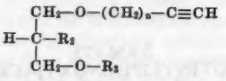
wherein R is an unsaturated aliphatic radical selected from the group consisting of alkenyl, alkynyl, alkadienyl, cycloalkenyl and mixtures thereof, and wherein each group can have from 2 to 20 carbon atoms.

3,636,084
SEDATIVE COMPOSITIONS

Michel L. Delalande, Paris France, assignor to Delalande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Continuation-in-part of application Ser. No. 567,861, July 26, 1966, now Patent No. 3,527,788. This application Apr. 15, 1968, Ser. No. 721,170
Claims priority, application France, Apr. 17, 1967, 103,026
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 C 2 Claims

A compound which has tranquilizing and myo-relaxing properties and which is represented by the formula:



in which n is an integer from one to four inclusive, R_2 is a hydroxyl or carbamoyloxy ($OCONH_2$) radical and R_3 is a saturated or unsaturated, straight or branched-chain hydrocarbon radical having one to seven carbon atoms, which radical may be halogen substituted or a substituted phenyl radical.

3,636,085
PERFLUOROALKYLSULFONAMIDO - ALKYL ESTERS OF FUMARIC ACID AND OTHER ETHYLENICALLY UNSATURATED POLYBASIC ACIDS AND POLYMERS THEREOF

Eduard Karl Kleiner, New York, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,439
Int. Cl. C07c *69/52, 69/60*
U.S. Cl. 260—485 F 19 Claims

Monomeric perfluoroalkylsulfonamido-alkyl esters of fumaric, maleic, citraconic, mesaconic, itaconic, aconitic,

and methylene malonic acid form homopolymers and form copolymers with other ethylenically unsaturated comonomers. The polymers obtained have valuable soil repellent properties and are therefore especially useful in textile finishes. A preferred compound exemplified is bis[2-(N-ethyl-n-perfluorooctanesulfonamido)ethyl] itaconate.

3,636,086

METHOD FOR INHIBITING THE POLYMERIZATION OF UNSATURATED CARBOXYLIC ACID ESTERS

Akio Yamagishi, Takaharu Ishida, Yukinaga Aono, and Shigekatsu Kondo, Niihama-shi, Japan, assignors to Sumitomo Chemical Company Ltd., Osaka, Japan

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,200

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R 8 Claims

Acrylic and methacrylic acid esters can be prevented from polymerization due to the presence of water in the steps of preparation thereof by addition of a radical polymerization inhibitor together with at least one compound selected from the group consisting of condensed phosphoric acid salts such as alkali pyrophosphates, tripolyphosphates, tetrametaphosphates and hexametaphosphates, and silicic acid salts.

3,636,087

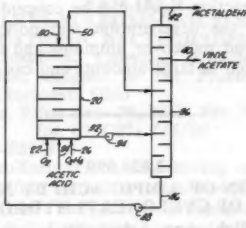
VINYL ACETATE RECOVERY PROCESS

Frederick F. Caserio, Jr., Laguna Beach, Calif., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Sept. 12, 1966, Ser. No. 578,547

Int. Cl. C07c *67/04, 67/06*

U.S. Cl. 260—497 R 5 Claims



The solvent extraction of vinyl acetate from a reaction product mixture including vinyl acetate, acetic acid, and water including the step of freezing the water and acetic acid prior to extraction and the recirculation of the extracted reaction product mixture for reuse is disclosed.

3,636,088

HALOALKYL PHOSPHINIC ACIDS AND THEIR APPLICATION TO COTTON

Leon H. Chance and Ethel K. Leonard, New Orleans, and George L. Drake, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application Jan. 24, 1969, Ser. No. 823,206, which is a division of application Ser. No. 635,680, May 3, 1967, now Patent No. 3,484,184. Divided and this application Nov. 14, 1969, Ser. No. 871,295

Int. Cl. C07s *9/30*

U.S. Cl. 260—502.4 R 1 Claim

Bis(chloromethyl)phosphinic acid is prepared by a new method; other phosphinic acids are prepared by reacting certain ketones with hypophosphorus acid; and new cellulosic derivatives are prepared by crosslinking fibrous cellulose with these phosphorus containing compounds.

3,636,089

PRODUCTION OF AROMATIC DITHIOCARBOXYLIC ACIDS

Friedrich Becke, Heidelberg, and Helmuth Hagen, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Coda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 3, 1968, Ser. No. 733,773

Claims priority, application Germany, June 16, 1967, P 12 74 121.8–42

Int. Cl. C07c *153/00*

U.S. Cl. 260—502.6 4 Claims

The production of aromatic dithiocarboxylic acids by reaction of aromatic monohalomethyl compounds with elementary sulfur and alkali metal or alkaline earth metal alcoholates. The new products of the process are valuable starting materials for the production of dyes and pesticides.

3,636,090

SULFONATION OF BENZENE UNDER SUPERATMOSPHERIC PRESSURE

John J. Luecken, East St. Louis, Ill., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 22, 1967, Ser. No. 663,474

Int. Cl. C07c *143/24*

U.S. Cl. 260—505 E 6 Claims

A process for the preparation of benzenesulfonic acid by the sulfonation of benzene in the liquid phase with a sulfonating agent under superatmospheric pressure while passing benzene vapor through the liquid.

3,636,091

NOVEL 9-CARBOXYMETHYL - 9-PHOSPHABICYCLONONANES AND ALKALI METAL SALTS THEREOF

Ronald F. Mason, Mill Valley, and Wilhelm Keim, Berkeley, Calif., assignors to Sun Oil Company, New York, N.Y.

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,375

Int. Cl. C07f *9/50*

U.S. Cl. 260—514 R 4 Claims

9-carboxymethyl-9-phosphabicyclononanes and alkali metal salts thereof, useful as ligands of organometallic olefin oligomerization catalysts, are produced by the direct condensation of the sec-phosphine 9-phosphabicyclononane and a haloacetic acid.

3,636,092

PRODUCTION OF 2,4,5-TRICHLOROBENZOIC ACID

Heinz Nohe, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik AG, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,934

Claims priority, application Germany, Dec. 6, 1968, P 18 13 013.7

Int. Cl. C07c *63/12*

U.S. Cl. 260—515 A 8 Claims

The production of 2,4,5-trichlorobenzoic acid by heating a 3,4,5,6-tetrachlorocyclohexadiene-1,2-dicarboxylic acid or a mixture thereof in an aqueous medium and in

the presence or absence of basic reagents, or in an organic solvent in the presence of basic reagents at temperatures of from 30° to 300° C.

3,636,093

RESOLUTION OF 2-METHYLENE CYCLOPROPANE CARBOXYLIC ACID

Alexander M. Hoinowski, Union, and David F. Hinkley, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 29, 1968, Ser. No. 748,215

Int. Cl. C07c *61/16*

U.S. Cl. 260—514 P **1 Claim**

The racemic mixture of 2-methylenecyclopropane carboxylic acid is resolved into its antipodes and obtained in a pure state with high yields.

3,636,094

NORBORNANECARBOXYLIC ACID AMIDES OF ANTHRANILIC ACID

Peter Yonan, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 25, 1969, Ser. No. 845,042

Int. Cl. C07c *103/30*

U.S. Cl. 260—518 R **8 Claims**

Amides wherein the nitrogen is part of an anthranilic acid system and the carbonyl is part of a norbornane- or norbornene-carboxylic acid system are described herein. The compounds are active against a variety of organisms including bacteria, protoza, fungi, and algae. They are also useful as anti-inflammatory agents and anti-atherogenic agents.

3,636,095

PREPARATION OF AROMATIC CARBOXYLIC ACIDS

Kenji Nakaoka, Numazu-shi, and Tadao Kato and Seikichi Matsuhisa, Mishima-shi, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 330,220, Dec. 2, 1963. This application July 10, 1967, Ser. No. 652,012

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **12 Claims**

In a process for preparing a specific aromatic carboxylic acid in a lower aliphatic carboxylic acid solvent under an oxygen partial pressure of 0.2–70 atm. and at a temperature of 60–200° C., an improvement which comprises using a cobalt compound as a catalyst and paraldehyde as a promoter, characterized in that the amount of said cobalt compound is about 0.62–4% by weight as cobalt based on said lower aliphatic carboxylic acid solvent and the total using amount of said paraldehyde is about 0.667–8% by weight of said lower aliphatic carboxylic acid solvent.

3,636,096

PROCESS FOR THE PREPARATION OF BENZENE DICARBOXYLIC ACIDS

Marion J. Mathews III and Charles R. Campbell, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 27, 1968, Ser. No. 708,527

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 N **8 Claims**

In the preparation of a benzene dicarboxylic acid by oxidation of a liquid xylene with nitric acid, the yield of the benzene dicarboxylic acid can be substantially improved by carrying out the oxidation in the presence of a nitro-substituted aromatic compound.

3,636,097

ISOLATION OF MALIC ACID FROM TOBACCO

William R. Harvey, Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,963

Int. Cl. C07c *51/48*

U.S. Cl. 260—527 R **8 Claims**

Natural, *l*-malic acid and salts thereof are obtained in good yield from bright tobacco parts by extraction of water-solubles including malic acid and water soluble pectins. This is followed by enzymatic de-esterification of pectins fractions under mildly acid conditions. Pectin degradation products are removed. Neutralization with an alkaline earth metal oxide or hydroxide yields the *l*-malic acid as the corresponding salt. Conventional treatment permits isolation of the *l*-malic acid.

3,636,098

PROCESS FOR PRODUCING METHIONINE

Takesaburo Shima, Akio Yamagishi, Masao Sada, Bonji Osaki, and Zenichi Yamamoto, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed June 29, 1967, Ser. No. 650,016

Claims priority, application Japan, July 2, 1966, 41/43,158

Int. Cl. C07c *101/04, 149/20*

U.S. Cl. 260—534 S **5 Claims**

A process for producing α-amino acid comprising introducing a synthesis liquid of a hydantoin compound directly into a hydrolysis step to effect the hydrolysis of said compound and then concentrating the resulting reaction liquid as well as recovering ammonia and carbon dioxide to recycle them to the synthesis step of the hydantoin compound. According to this process, not only α-amino acid can be continuously produced in high yields but also the reaction liquid can be concentrated without accompanying the degeneration and polymerization of α-amino acid and, moreover, ammonia and carbon dioxide can be recovered in large amounts and can be re-used.

3,636,099

PREPARATION OF ADIPIC ACID BY NITRIC ACID OXIDATION OF CYCLOHEXYLHYDROXYLAMINE

Thomas F. Mich, Ann Arbor, Mich., and Werner H. Mueller, Gulf Breeze, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,416

Int. Cl. C07c *51/24*

U.S. Cl. 260—537 P **5 Claims**

Adipic acid is produced in high yields by oxidation of cyclohexylhydroxylamine with aqueous nitric acid in the liquid phase.

3,636,100

PREPARATION OF ADIPIC ACID BY NITRIC ACID OXIDATION OF NITROSOCYCLOHEXANE DIMER

Werner H. Mueller, Gulf Breeze, and John J. Hicks, Jr., and Charles R. Campbell, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,245

Int. Cl. C07c *51/24*

U.S. Cl. 260—537 P **5 Claims**

Adipic acid is produced in high yields by oxidation of the nitrosocyclohexane dimer with aqueous nitric acid in the liquid phase.

3,636,101
PROCESS FOR THE PRODUCTION OF DICARBOXYLIC ACIDS

Thomas F. Doumani, deceased, late of Fullerton, Calif., by Selma S. Doumani, executrix, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Oct. 24, 1969, Ser. No. 870,015
Int. Cl. C07c *51/24*
U.S. Cl. 260—537 P 7 Claims

A cycloparaffin is converted to an aliphatic dicarboxylic acid by nitrating the cycloparaffin, contacting the resulting nitrocycloparaffin with an alkali or alkaline earth hydroxide or with ammonia to form a metal or ammonium salt thereof, and oxidizing the salt with nitric acid to form the dicarboxylic acid. A preferred method is nitrating cyclohexane, forming an ammonium salt of the nitrocyclohexane and oxidizing the salt with nitric acid in the presence of molecular oxygen to form adipic acid, useful in the manufacture of nylon.

3,636,102
PREPARATION OF CARBOXYLIC ACID CHLORIDES

Alfred E. Lippman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 21, 1967, Ser. No. 632,524
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 Y 7 Claims

The preparation of α-chloroacid chlorides by the reaction of an approriate α-chlorocarboxylic acid with sulfur dichloride and chlorine in the presence of dimethylformamide. Carboxylic acid chlorides are valuable intermediates for the preparation of organic compounds, especially herbicidal compounds, which have an acyl moiety.

3,636,103
TETRAALKYL SULFOXIMINIUM SALTS AS CATIONIC BACTERICIDES

Eugene P. Gosselink, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,938
Int. Cl. C07c *145/00*
U.S. Cl. 260—551 S 3 Claims

Tetraalkyl sulfoximinium salts having one long-chain alkyl group of 10 to 16 carbon atoms are effective cationic bactericides. Three methods of preparation are given; each begins with dialkyl sulfoximine and adds alkyl groups sequentially to nitrogen.

3,636,104
PROCESS FOR PREPARING N,N'-DIARYLTHIOUREAS

Ehrenfried H. Kober, Hamden, Conn., and Gerhard F. Ottmann, Wuppertal-Elberfeld, Germany, assignors to Olin Mathieson Chemical Corporation, New Haven, Conn.

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,616
Int. Cl. C07c *157/00*
U.S. Cl. 260—552 R 25 Claims

The process for preparing N,N'-diarylthioureas by reacting:

(a) carbon disulfide and/or carbonyl sulfide,
(b) water,
(c) a compound selected from the group consisting of
  (1) an aromatic nitro compound,
  (2) an aromatic nitroso compound,
  (3) and mixtures of (1) and (2),
(d) and a base,

and recovering the N,N'-diarylthioureas produced thereby.

3,636,105
1-FLUOROACETYLAMINO-2,2,2-TRICHLOROETHYL UREAS

Christa Fest, Wuppertal-Elberfeld, and Gunther Hermann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,143
Claims priority, application Germany, Nov. 22, 1968, P 18 10 293.7
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 R 7 Claims

1-fluoroacetylamino-2,2,2-trichloro-ethyl ureas, i.e. N-(1-fluoroacetylamino - 2,2,2 - trichloro-eth-1-yl)-N'-(alkyl, phenyl, alkoxyphenyl and chloro-substituted phenyl)-ureas, which possess selective rodenticidal properties, and which may be produced by conventional methods.

3,636,106
PROCESS FOR UREA SYNTHESIS

John F. Villiers-Fisher, Kendall Park, and Philip F. Kaupas, Old Bridge, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Sept. 12, 1968, Ser. No. 759,371
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 A 28 Claims

A process for the high pressure synthesis of urea from ammonia and carbon dioxide is provided, in which recycle aqueous ammonium carbamate solution is pressurized and stripped with feed carbon dioxide, preferably at or slightly above urea synthesis reactor pressure. The stripping step is carried out in a heat exchange zone which is externally heated to decompose ammonium carbamate, so that a high pressure off-gas principally containing carbon dioxide and ammonia is produced from the stripping step, together with a liquid effluent principally consisting of water, which may be discarded or processed to recover ammonia values. Feed ammonia is preferably added to the high pressure off-gas from stripping, to produce a combined process stream having an ammonia to carbon dioxide molar ratio of about 2:1, which is passed through a decomposer-heat exchange zone to heat effluent from the urea synthesis reactor, thus decomposing ammonium carbamate in the urea synthesis effluent and producing an off-gas which is processed to produce the aqueous ammonium carbamate solution. The combined process stream may cool during condensation, depending on the ammonia to carbon dioxide ratio in the decomposer-heat exchange zone, however the principal effect on the combined process stream is condensation of molten ammonium carbamate, to produce a gas-liquid mixture of low or negligible water content. The resulting process stream containing condensed ammonium carbamate is passed to urea synthesis. In an alternative embodiment of the invention, the combined process stream produced by adding ammonia to the stripper off-gas may be cooled in heat exchange with liquid water which is vaporized to produce steam, which may be employed in a separate unit to heat the urea synthesis effluent and decompose ammonium carbamate.

3,636,107
SUBSTITUTED 5-HALO-3-PHENYLSALICYLANILIDES

Jack D. Early, Bethesda, and John P. Chupp, Kirkwood, Md., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Application Aug. 8, 1967, Ser. No. 659,040, now Patent No. 3,525,766, dated Aug. 25, 1970, which is a division of application Ser. No. 495,678, Oct. 13, 1965, now Patent No. 3,382,145. Divided and this application Nov. 10, 1969, Ser. No. 871,312
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 S 3 Claims

Compounds characterized by a 5-halo-3-phenylsalicylanilido nucleus, the anilido group of which having substituents of the group nitro, cyano and trifluoromethyl. These compounds are useful as gastropodicides.

3,636,108

CATALYTIC HYDROGENATION OF AROMATIC NITROGEN CONTAINING COMPOUNDS OVER ALKALI MODERATED RUTHENIUM

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 691,933, Dec. 20, 1967, which is a continuation-in-part of application Ser. No. 587,981, Oct. 20, 1966, which in turn is a continuation-in-part of application Ser. No. 516,083, Dec. 23, 1965. This application is also a continuation-in-part of application Ser. No. 587,981, Oct. 20, 1966, which is a continuation-in-part of application Ser. No. 516,083, Dec. 23, 1965. This application is also a continuation-in-part of application Ser. No. 691,980, Dec. 20, 1967, which is a continuation-in-part of application Ser. No. 587,989, Oct. 20, 1966, which in turn is a continuation-in-part of application Ser. No. 516,093, Dec. 23, 1965. This application is also a continuation-in-part of application Ser. No. 587,989, Oct. 20, 1966, which is a continuation-in-part of application Ser. No. 516,093, Dec. 23, 1965. This application Apr. 4, 1969, Ser. No. 813,753

Int. Cl. C07c *85/14*

U.S. Cl. 260—563 D **22 Claims**

Organic aromatic nitrogen containing compounds, such as p-phenylenediamine or 4,4′-methylenedianiline, can be hydrogenated by admixing the compound with hydrogen at a hydrogen partial pressure of at least 200 p.s.i., a total pressure of from 200 p.s.i. to 15,000 p.s.i., a temperature in the range of from 100° C. to 300° C., in the presence of from 0% to 200% by weight, based on the weight of the compound to be hydrogenated, of added ammonia, and in the presence of from 0.001% to 10% by weight, based on the compound to be hydrogenated and calculated as metallic ruthenium of a ruthenium catalyst supported on an inert carrier, said catalyst being alkali moderated with from 0.1% to 15% of a basic metal compound calculated as the alkali metal.

3,636,109

2,2′-ISOPROPYLIDENEBIS[(6 - LOWER ALKOXY-m-PHENYLENE)METHYLENE]BIS(2 - THIOPSEUDOUREA) DIHYDROCHLORIDE

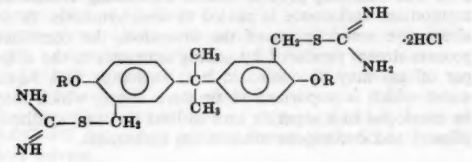
Henry E. Hennis, Coleman, and Duane B. Priddy, Lansing, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,894

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 E **2 Claims**

Compounds corresponding to the formula



wherein R represents a lower alkyl group. The compounds are prepared by reactin a 2,2′-bis(α-chloro,4-lower alkoxy-m-tolyl)propane with thiourea. The compounds are useful as antimicrobials.

3,636,110

IMINES

Harold I. Weingarten, St. Louis, William A. White, Creve Coeur, and John P. Chupp, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 20, 1966, Ser. No. 558,584

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 R **6 Claims**

The present invention relates to the preparation of imines, particularly sterically hindered imines.

3,636,111

CARBAMOYL OXIMES

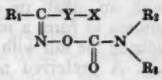
Marvin J. Karten, Ardsley, N.Y., assignor to USV Pharmaceutical Corporation

No Drawing. Continuation-in-part of application Ser. No. 714,450, Mar. 20, 1968, which is a continuation-in-part of application Ser. No. 680,047, Nov. 2, 1967. This application Nov. 18, 1969, Ser. No. 877,822

Int. Cl. C07c *131/00*

U.S. Cl. 260—566 **14 Claims**

Compounds of the formula



wherein R_1 and R_3 are lower aliphatic, cycloalkyl, or aromatic (including hetero), R_2 is hydrogen, aromatic, lower aliphatic, or phenyl-lower alkyl, Y is an alkylene group having from 1–5 carbon atoms, and X is a secondary amino group, have potent analgesic activity, particularly when R_3 is a p-alkoxyphenyl (e.g. p-methoxyphenyl and p-ethoxyphenyl). Compounds wherein both R_1 and R_3 are phenyl exhibit anticonvulsant activity. Compounds where R_1 is phenyl or 4-chlorophenyl and R_3 is cycloalkyl, such as cyclohexyl, show topical anesthetic activity. A number of compounds also have hypotensive activity.

3,636,112

α-HALO-α-FORMYL-CARBONYL-PHENYL-HYDRAZONES

Wilfried Draber and Karl Heinz Büchel, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 2, 1969, Ser. No. 838,631

Claims priority, application Germany, July 4, 1968, P 17 68 825.4

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B **9 Claims**

α-halo - α - formyl-carbonyl-phenyl-hydrazones, i.e. α-(chloro and bromo)-α-(formyl, dioxa-pentamethylene and oxa-thia-pentamethylene)-carbonyl - (mono to tri alkyl, chloro, trifluoromethyl, trifluoromethyl mercapto and/or alkyl sulfonyl-substituted phenyl)-hydrazones, which possess arthropolicidal, especially acaricidal and insecticidal, properties, and which may be produced by conventional methods.

3,636,113

NOVEL FRAGRANCE MATERIALS, CHEMICAL INTERMEDIATES, AND PROCESSES

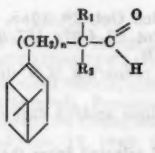
John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrences, Inc., New York, N.Y

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,038

Int. Cl. C07c *119/00*

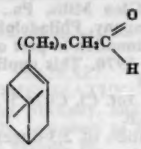
U.S. Cl. 260—566 R **1 Claim**

Novel aldehydes having the structure:



wherein R_1 is hydrogen or lower alkyl, R_2 is lower alkyl, and n is 1 or 2; lower alkyl acetals thereof; lower alkylene acetals thereof; mixtures and olfactory compositions containing same; mixtures and olfactory compositions containing 6,6 dimethyl bicyclo [3.1.1.]hept-2-ene-alka-

nals (hereinafter referred to as pinoalkanals) having the structure:



wherein *n* is 1 or 2; lower alkyl acetals thereof; lower alkylene cyclic acetals thereof; novel processes for the production of such chemical compounds; and Schiff bases of said aldehydes and pinoalkanals.

3,636,114

NOVEL QUATERNARY AMMONIUM COMPOUNDS AND METHOD FOR PREPARATION THEREOF

Erich Tobler and Donald J. Foster, Charleston, W. Va., assignors to Union Carbide Corporation

No Drawing. Continuation-in-part of application Ser. No. 715,979, Mar. 26, 1965. This application July 16, 1968, Ser. No. 745,103

Int. Cl. C07c *93/02*

U.S. Cl. 260—567.6 **4 Claims**

Quaternary ammonium compounds containing at least one 2-hydroxy alkyl group are prepared by treating epoxy alkanes with primary or secondary amines, followed by quaternization of the tertiary amines thus obtained. The compounds possess germicidal and/or textile softening properties. The various ammonium compounds prepared comprise bis(2 - hydroxyoctadecyl)dimethylammonium chloride, bis(2 - hydroxyhexadecyl)dimethylammonium chloride, 2 - hydroxyoctadecylhexadecyldimethylammonium chloride 2 - hydroxyoctadecylbenzyl dimethylammonium chloride, 2-hydroxyoctadecyl 1-octadecoxymethyl dimethylammonium chloride, 2-hydroxydodecylbenzyl dimethylammonium chloride, bis(2-hydroxyoctyl)dimethylammonium chloride, 2-hydroxytetradecyl trimethylammonium chloride.

3,636,115

QUATERNARY AMMONIUM DERIVATIVES OF INDENE

Edward Griffin Shay, Belle Mead, and Edward A, Tavss, Jersey City, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Filed Sept. 12, 1969, Ser. No. 857,573

Int. Cl. C07c *87/68*

U.S. Cl. 260—567.6 M **5 Claims**

Microbiocidal quaternary ammonium derivatives of indene, at least some of which retain a high degree of their microbiocidal activity in hard water, the quaternary nitrogen having a long chain alkyl of 8 to 18 carbon atoms, but preferably 12 to 14 carbon atoms, and two lower alkyl chains of 1 to 4 carbon atoms attached thereto.

3,636,116

1,2-SUBSTITUTED INDENE COMPOUNDS

Donald L. Trepanier, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 3, 1968, Ser. No. 757,102

Int. Cl. C07c *87/28;* **C07d** *85/00, 87/00*

U.S. Cl. 260—570 **5 Claims**

1,2-substituted indene compounds such as 3-(substituted phenyl) - 3a,8b - dihydro - 4H-indeno[2,1-d]-isoxazoles are prepared by the reaction of indene with substituted chlorobenzhydroxamic acid. The indenoisoxazole compounds can be converted to other substituted indene compounds by reduction to produce 2-(α-amino-substituted-benzyl)-1-indanols, which in turn can be reacted with cyanogen bromide to produce substituted α-(1-hydroxy-2-indanyl)benzylcyanamides, which can be cyclized to prepare further substituted indene compounds, namely, 2 - amino-4-(substituted phenyl)-4,4a,5,9b-tetrahydroindeno[2,1-e]oxazines. The compounds are useful in the study of animal behavior and are particularly useful as potentiators of amphetamine and of barbiturates such as hexobarbital.

3,636,117

PROCESS FOR MAKING 4,4'-METHYLENE BIS (2-CHLOROANILINE)

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 3, 1968, Ser. No. 757,158

Int. Cl. C07c *85/08*

U.S. Cl. 260—570 D **4 Claims**

A process of manufacturing 4,4'-methylene bis(2-chloraniline) by condensing ortho-chloroaniline with formaldehyde in the presence of hydrochloric acid, the molar ratio of ortho-chloraniline to formaldehyde being 1.9–2.0:1 and the molar ratio of hydrochloric acid to ortho-chloroaniline being at least 1.35:1.

3,636,118

SELECTIVE ABSORPTION PROCESS USING A PRESSURE OSCILLATION SYSTEM

William J. Asher, Fanwood, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of application Ser. No. 703,143, Feb. 5, 1968, which is a continuation-in-part of application Ser. No. 363,258, Apr. 28, 1964. This application Aug. 25, 1969, Ser. No. 866,053

Int. Cl. C07c *7/12;* **C10g** *25/04;* **B01j** *1/22*

U.S. Cl. 260—674 SA **18 Claims**

A method of improving the mass transfer rate in gas-solid sorption and sorption-catalytic processes. The improvement is accomplished by rapidly oscillating the gas pressure on the bed. The improvement is most effective in processes which are limited by the rate of diffusion of the gaseous component into the pores of the solid material. A significant improvement is realized in processes wherein long-chain n-paraffins are separated from hydrocarbon mixtures.

3,636,119

4-AMINO-2-(8-CYCLOHEXYLOCTYL OR 7-CYCLOHEXYLHEPTYL)-1-NAPHTHOL

Louis F. Fieser, 27 Pinehurst Road, Belmont, Mass. 02178; Sydney Archer, Bethlehem, N.Y. (52 Wisconsin Ave., Delmar, N.Y. 12054); and Roman R. Lorenz, 3 Highland Drive, East Greenbush, N.Y. 12061

No Drawing. Original application Oct. 25, 1966, Ser. No. 589,204. Divided and this application Oct. 20, 1969, Ser. No. 870,807

Int. Cl. C07c *91/46*

U.S. Cl. 260—575 **2 Claims**

4-amino-2-Q-1-naphthol compounds which are useful as intermediates in the synthesis of 2-Q-1,4-naphthoquinone compounds, where Q is (7-cyclohexylheptyl or 8-cyclohexyloctyl).

3,636,120

PROSTAGLANDIN E PRIMARY ALCOHOLS

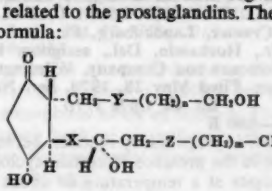
John E. Pike, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Oct. 9, 1967, Ser. No. 673,979

Int. Cl. C07c *49/28, 49/40*

U.S. Cl. 260—586 R **6 Claims**

This invention is a class of new organic compounds structually related to the prostaglandins. These compounds have the formula:



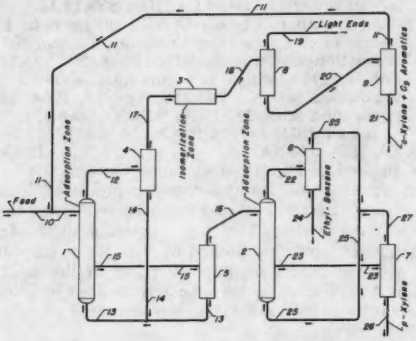
wherein X is $-CH_2CH_2-$ or trans-CH=CH— and both Y and Z are $-CH_2CH_2-$, or wherein X is trans-CH=CH—, Y is cis-CH=CH—, and Z is $-CH_2CH_2-$ or cis-CH=CH—, wherein *m* is 0, 1, or 2, and wherein *n* is 2, 3, 4, or 5, and the tricarboxyacylates thereof. These compounds have biological properties which cause them to be useful in the study and treatment of physiological conditions involving abnormal lipid mobilization and blood platelet aggregation. This invention also involves processes and intermediates for preparing these compounds from the natural prostaglandins and analogues thereof.

3,636,121

PROCESS FOR THE PRODUCTION AND RECOVERY OF ORTHO-XYLENE, PARA-XYLENE AND ETHYLBENZENE

Laurence O. Stine, Western Springs, and Donald B. Broughton, Evanston, Ill., assignors to Universal Oil Company, Des Plaines, Ill.

Filed Nov. 7, 1969, Ser. No. 874,919
Int. Cl. C07c *7/12, 15/08*
U.S. Cl. 260—674 SA **9 Claims**



A dual adsorption and isomerization process employing a combination of a first adsorption zone in communication with a second adsorption and an isomerization zone. The process is suitable for the separation of various C_8 isomers into individual relatively pure streams containing the individual isomers. A first adsorption zone separates para-xylene and ethylbenzene from the other C_8 aromatic isomers fed to that adsorption zone and passes the para-xylene and ethylbenzene to a second adsorption zone wherein para-xylene and ethylbenzene are separated into relatively purified para-xylene and ethylbenzene streams. The remaining C_8 aromatics separated from the para-xylene and ethylbenzene in the first adsorption zone are passed into an isomerization zone to effect the production of additional para-xylene which is eventually recycled to the first adsorption zone allowing increased yield of para-xylene based on the C_8 aromatic fed to the first adsorption zone. An ortho-xylene stream is recovered from the effluent stream from the isomerization reaction zone.

3,636,122

PREPARATION OF 1,4-HEXADIENE FROM ETHYLENE AND BUTADIENE WITH SELECTED CYCLOPENTADIENYLRHODIUM CATALYSTS

Richard D. Cramer, Landenberg, Pa., and Richard V. Lindsey, Jr., Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 28, 1970, Ser. No. 41,538
Int. Cl. C07c *3/10*
U.S. Cl. 260—680 B **10 Claims**

1,4-hexadiene is prepared by reaction between ethylene and butadiene in the presence of certain cyclopentadienylrhodium catalysts at a temperature of about 35–300° C.

3,636,123

OXYDEHYDROGENATION PROCESS

Roger M. Bean, Glen Mills, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 15,893, Mar. 2, 1970. This application Jan. 28, 1971, Ser. No. 110,638
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **4 Claims**

Oxydehydrogenation of 2,3-dimethylbutene-1 to 2,3-dimethylbutadiene using a catalyst obtained from ammonium hexamolybdochromiate.

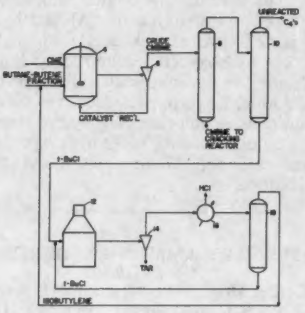
3,636,124

POLYOLEFIN PRODUCTION

John R. Coleman, Jr., Littleton, David W. Hall, Englewood, and Frank L. Dormish, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 25, 1969, Ser. No. 861,100
Int. Cl. C07c *1/20, 41/12*
U.S. Cl. 260—681 **9 Claims**

In the preparation of polyolefins by reacting a haloether and an olefin and splitting hydrogen halide and alcohol from the intermediate adduct, a side reaction occurs between olefin and hydrogen halides to produce a halide of the olefin. This by-product is cracked to form



olefin and hydrogen halides which are recycled for use as starting materials in the process of making the polyolefins.

3,636,125

ISOMERIZATION OF BRANCHED CHAIN 1-OLEFIN TO BRANCHED CHAIN 2-OLEFIN EMPLOYING 5A MOLECULAR SIEVES

Frederic H. Hoppstock, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,489
Int. Cl. C07c *5/30*
U.S. Cl. 260—683.2 **3 Claims**

There is disclosed a process for the isomerization of 1-olefins to 2-olefins using 5A molecular sieves as a catalyst.

3,636,126

METATHESIS OF OLEFINS

Henry R. Menapace, Stow, and Jin-Liang Wang, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,165
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **2 Claims**

There is disclosed a process for the formation of new olefins from internal olefins by subjecting an internal ole-

fin to a catalyst of a mixture of alkyllithium and tungsten or molybdenum halides.

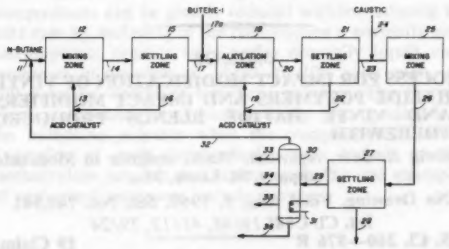
3,636,127
OLEFIN ISOMERIZATION PROCESS
Frederick C. Ramquist, Stickney, and Richard C. Wackher, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,512
Int. Cl. C07c *5/24*
U.S. Cl. 260—683.2 9 Claims

Isomerizable olefins, in admixture with polymerizable diolefins are isomerized without polymerization of the diolefins by the utilization of a crystalline aluminosilicate with at least a portion of its cation content provided by copper or zinc.

3,636,128
OLEFIN OLIGOMERIZATION WITH A NICKEL-CONTAINING CATALYST SYSTEM
Howard E. Dunn, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Apr. 24, 1969, Ser. No. 819,105
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D 5 Claims

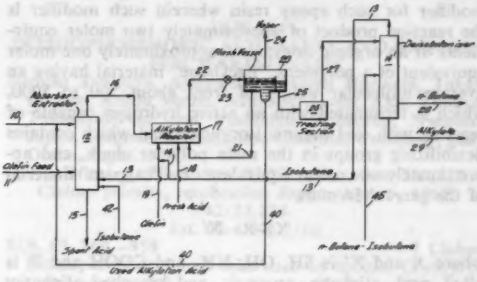
Olefins such as propylene are oligomerized to products such as dimers with a catalyst system comprising an organoaluminum compound such as ethylaluminum dichloride and a nickel complex such as [1,2-bis(diphenylphosphino)ethylene]dichloronickel, wherein the nickel component can be recovered and recycled to the oligomerization zone.

3,636,129
NORMAL PARAFFIN ALKYLATION USING FLUOROSULFONIC ACID AND GROUP V METAL FLUORIDE CATALYST
Paul Thomas Parker and Charles Newton Kimberlin, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company
Filed Feb. 18, 1970, Ser. No. 12,303
Int. Cl. C07c *3/54, 3/56*
U.S. Cl. 260—683.47 7 Claims



Normal paraffins containing from C_4 to C_6 carbon atoms are alkylated with C_2 to C_5 olefins in the presence of a catalyst comprised of fluorosulfonic acid and a Group V metal fluoride such as antimony pentafluoride at temperatures in the range of —40° to 250° F. The normal paraffin is first contacted with the catalyst composition at a temperature in the range of about 80° to 250° F. to form cations which are thereafter contacted with the olefin at a temperature in the range of about —40° to 100° F.

3,636,130
ALKYLATION PROCESS UTILIZING SIMULTANEOUS ABSORPTION AND EXTRACTION OF DIALKYL SULFATES
James O. Francis, Houston, Tex., and Arthur R. Goldsby, Chappaqua, N.Y., assignors to Texaco Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 602,258, Dec. 16, 1966. This application Apr. 30, 1970, Ser. No. 33,524
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.62 5 Claims



Combination sulfuric acid alkylation-acid recovery process wherein olefin feed is reacted with used alkylation acid in the presence of alkylatable isoparaffin hydrocarbon to produce alkyl sulfates which are simultaneously extracted by the alkylatable isoparaffin and the extract solution passed to the alkylation zone.

3,636,131
BASIC DYEABLE POLYESTER
Gerald W. Davis, Gerald Farrow, and Nestor A. Ravenna, Charlotte, N.C., assignors to Fiber Industries, Inc.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,980
Int. Cl. C08g *17/14*
U.S. Cl. 260—75 S 6 Claims

A process for producing basic dyeable polyester fiber and film-forming polymer and the product produced thereby, the process involving incorporating in the polymer minor amounts of a metal salt of isethionic acid and minor amounts of a di-functional compound which copolymerizes with the polymer and functions as a dye opener.

3,636,132
BLOCK COPOLYMERS OF TETRAHYDROFURAN AND 3,3-BIS(CHLOROMETHYL) OXETANE
Takeo Saegusa, Kyoto, and Shuichi Matsumoto, 8–22 Tojiin Kitamachi, Kita-ku, Kyoto, Japan; said Matsumoto assignor to said Saegusa
Filed July 16, 1970, Ser. No. 55,540
Claims priority, application Japan, July 19, 1969, 44/56,762
Int. Cl. C08g *23/04*
U.S. Cl. 260—823 12 Claims

Block copolymers of tetrahydrofuran (THF) and 3,3-bis(chloromethyl) oxetane (BCMO) are provided containing an amorphous block of random THF-BCMO copolymer having both of its polymer chain ends linked to crystalline homopolymer blocks selected from poly-THF and poly-BCMO.

3,636,133

EPOXY RESIN ADHESIVE COMPOSITIONS CONTAINING AN ISOCYANATE TERMINATED POLYURETHANE PREPOLYMER AND A CHAIN EXTENDER

Jerry Marvin Hawkins, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,446
The portion of the term of the patent subsequent to Aug. 25, 1987, has been disclaimed
Int. Cl. C08g 47/00, 45/12
U.S. Cl. 260—824 EP 6 Claims

This invention is directed to thermosettable resin compositions comprising essentially an epoxy resin and between about 5 and 50 parts per hundred parts of epoxy resin of a reactive terminated urethane type polymeric modifier for such epoxy resin wherein such modifier is the reaction product of approximately two molar equivalents of an organic isocyanate, approximately one molar equivalent of a polymeric "backbone" material having an average molecular weight of from about 500 to 5000, which is terminated with an active hydrogen capable of reacting with said organic isocyanate and which contains flexibilizing groups in the main polymer chain, and approximately one molar equivalent of a "cappant" material of the general formula

$$X—R—X'$$

where X and X' is SH, OH, NH_2 and COOH and R is alkyl, aryl, aliphatic, aromatic, and branched aliphatic; wherein such polymeric modifier has an average molecular weight of at least about 500 but less than about 5000 and is compatible with the epoxy resin; and wherein the modified epoxy resin compositions are particularly useful in adhesive formulations.

3,636,134

ROOM TEMPERATURE VULCANIZABLE ACETOXYSILOXANE BLOCK COPOLYMER

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,319
Int. Cl. C08g 47/02, 47/06
U.S. Cl. 260—825 28 Claims

A room temperature vulcanizable acetoxysiloxane block copolymer of a polydiorganosiloxane block and a monoorganosiloxane block being endblocked with monoorganoacetoxysiloxane units is useful as an adhesive.

3,636,135

POLYAMIDES ADMIXED WITH POLYETHERESTERAMIDES

John David Garforth, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,507
Claims priority, application Great Britain, Sept. 5, 1968, 42,215/68
Int. Cl. C08g 41/04
U.S. Cl. 260—857 10 Claims

Polyamide compositions suitable for the manufacture of shaped articles, especially fibres, having anti-static and soil-resistant properties are uniform mixtures of a synthetic linear polyamide and a polyetheresteramide obtained by condensing (a) an aliphatic dicarboxylic acid, and (b) a hydroxypolyoxyalklene compound, and either (c) an aliphatic or cycloaliphatic amino acid or lactam, or (d) an aliphatic or cycloaliphatic diamine, or both (c) and (d). The most suitable polyetheresteramides are those in which less than 20% by weight of the repeat units in the polyamide segments thereof are identical with the repeat units of the polyamide. The soil-resistant properties of fibres are best developed by a scouring treatment.

3,636,136

METHOD OF POWDERING POLYAMIDES WITH HYDROLYZED ETHYLENE/VINYL ACETATE COPOLYMERS

Alvin E. Konopik, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 18, 1969, Ser. No. 877,852
Int. Cl. C08g 41/04
U.S. Cl. 260—857 L 9 Claims

Polyamides having melt indices in the range of 0.01 to 2000 are powdered by grinding in standard grinding equipment using as grinding aid about 1 to 100 percent by weight, based on the polyamide, of about 50–100 percent alcoholyzed ethylene/vinyl ester copolymer which, before being alcoholyzed, contained about 70 to 98 mole percent ethylene and about 2 to 30 mole percent vinyl ester. The resulting compositions are useful for preparing nylon color concentrates and, when the polyamide is relatively low melting, they are particularly useful as textile fusible adhesives.

3,636,137

BIS[o(CARBO - 2 - ETHYLHEXOXY)-BENZOYL] PEROXIDE AS POLYESTER CURING AGENT

Hans G. Gerritsen, Deventer, Hendrik Hansma, Schalkhaar, and Hans Jaspers, Deventer, Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V., Deventer, Netherlands

No Drawing. Original application Apr. 26, 1967, Ser. No. 633,703. Divided and this application June 5, 1969, Ser. No. 850,278
Claims priority, application Netherlands, May 6, 1966, 6606159
Int. Cl. C08f 21/00, 21/02
U.S. Cl. 260—861 1 Claim

The present invention relates to a new ortho-substituted dibenzoyl peroxide, viz bis[o - (carbo - 2 - ethylhexoxy)-benzoyl] peroxide capable of use as an initiator in the peroxidic polymerization of vinyl monomers and in the copolymerization of unsaturated polyester resins containing vinyl monomers as copolymerizable monomers; the invention also relates to a process for preparing bis[o-(carbo-2-ethylhexoxy)-benzoyl] peroxide and to the use of said peroxide as an initiator in the peroxidic polymerization of vinyl monomers and in the copolymerization of unsaturated polyester resins containing vinyl monomers as copolymerizable monomers.

3,636,138

PROCESS FOR IMPACT MODIFICATION OF VINYL HALIDE POLYMERS AND IMPACT MODIFIERS AND VINYL HALIDE BLENDS PRODUCED THEREWITH

Ludwig A. Beer, Agawam, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 5, 1968, Ser. No. 749,941
Int. Cl. C08f 19/08, 41/12, 29/24
U.S. Cl. 260—876 R 19 Claims

A novel graft copolymer is prepared utilizing a diene rubber substrate and two different interpolymers forming a graft superstrate. Initially the diene rubber is admixed with a polymerizable monomer formulation containing a monovinylidene aromatic hydrocarbon and an alkyl alkacrylate which is grafted thereonto. This graft copolymer is admixed with a second polymerizable monomer formulation containing a monovinylidene aromatic hydrocarbon and an unsaturated nitrile which is grafted thereonto to form a composite graft copolymer having a shell rich in the nitrile interpolymer. Blends of such composite graft copolymers with vinyl chloride polymers having a high degree of transparency are also disclosed.

3,636,139

POLY(VINYL CHLORIDE)

Norman G. Gaylord, New Providence, and Akio Takahashi, Parsippany, N.J., assignors to Gaylord Associates Inc., Newark, N.J.

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,850
Int. Cl. C08f *29/24, 15/02*
U.S. Cl. 260—876 R 17 Claims

Poly(vinyl chloride) of improved thermal stability is prepared by contacting vinyl chloride homopolymer with a 1,4-polybutadiene having a cis-1,4 content of at least 35%.

3,636,140

THERMOPLASTIC RESIN BLEND OF POLYSULFONE WITH ABS

Alfred F. Ingulli, Warren, Mich., and Henry L. Alter, West Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 827,766, May 26, 1969, which is a continuation-in-part of application Ser. No. 671,654, Sept. 29, 1967, which in turn is a continuation-in-part of application Ser. No. 866,068, Sept. 30, 1969, now Patent No. 3,555,119. This application Aug. 4, 1969, Ser. No. 847,070
The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed
Int. Cl. C08f *41/12*
U.S. Cl. 260—876 R 9 Claims

Blends of thermoplastic polysulfone resin with ABS plastic are characterized by an unusually useful combination of properties, particularly high heat distortion temperature in combination with good flow and processing characteristics, as well as impact resistance, flexural strength and self-extinguishing characteristics.

3,636,141

LOW SHRINKAGE 1,2-BUTADIENE POLYMER MOLDING COMPOSITION

Charles T. O'Neill, Dover, Ronald S. Krigbaum, Ironia, and Ralph W. Nussbaum, West Orange, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,827
Int. Cl. C08d *9/00, 9/02*
U.S. Cl. 260—880 R 9 Claims

Shrinkage is normally observed upon curing molding compositions based upon 1,2-butadiene polymers having at least 80% of the butadiene content combined therein in the 1,2 form. Such shrinkage in both unfilled and filled compositions can be greatly reduced without reducing the cure rate by including in the composition a normally solid thermoplastic organic resin and a normally liquid vinyl monomer in amounts of about 20–100 parts each, per 100 parts by weight of butadiene polymer. The thermoplastic resin must be at least partially incompatible with the butadiene polymer when the composition is cured. Examples of such thermoplastic resin include methyl methacrylate polymer and styrene polymer and examples of such vinyl monomer include styrene.

3,636,142

TRIORTHOPHOSPHATE ESTERS OF ETHOXYLATED TRIOLS

William G. De Pierri, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 4, 1968, Ser. No. 718,906
Int. Cl. C02b *5/06;* C07f *9/08*
U.S. Cl. 260—929 17 Claims

Triorthophosphate ester of ethoxylated triols having from 3 to 20 carbon atoms and 2 to 50 moles of ethylene oxide. The alkali metal and ammonium salts of said ester may be used to inhibit the deposition of water insoluble salts in aqueous system such as subsurface formations containing brine.

3,636,143

O-(2 - NITRO - 4 - ALKYL-PHENYL)-O-ALKYL-N-ISOPROPYL-AMIDO-PHOSPHOROTHIOATES

Gerhard Schrader, Wuppertal-Cronenberg, and Ludwig Eue and Helmuth Hack, Cologne, Germany, and Seiichi Hirane, Masahiro Aya, Shigeo Kishino, and Nobuo Fukazawa, Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,954
Int. Cl. A01n *9/36;* C07f *9/24*
U.S. Cl. 260—954 9 Claims

O-(2-nitro - 4 - alkyl - phenyl) - O - alkyl - N - isopropyl-amido-phosphorothioates, which possess herbicidal properties.

3,636,144

DITHIOPHOSPHORIC ACID SALTS AND PROCESS FOR MAKING SAME

Hiroshi Tsuchiya, Ashiya-shi, Fukashi Horiuchi, Takatsuki-shi, Kunio Mukai, Nishinomiya-shi, Akio Kimura, Takarazuka-shi, and Yoshihiko Nishizawa, Nara-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Apr. 3, 1968, Ser. No. 718,327
Claims priority, application Japan, Apr. 6, 1967, 42/22,234
Int. Cl. C07f *9/16*
U.S. Cl. 260—958 7 Claims

Dithiophosphoric acid salts such as sodium O-ethyl-S-benzylphosphorodithioate, potassium O-n-propyl - S - benzylphosphorodithioate, sodium O-n-butyl-S-ethylphosphorodithioate and potassium O-ethyl - S - 1-(2-phenylpropyl)phosphorodithioate are produced by reacting a thiolthionophosphoric acid ester with sodium hydrosulfide or potassium hydrosulfide in an absolute or aqueous organic solvent at 50° to 150° C. for 30 minutes to 5 hours. The thus produced dithiophosphoric acid salts are useful as intermediates for manufacturing dithiolester type organic phosphorus agricultural chemicals and further they include dithiophosphoric acid salts.

3,636,145

PREPARATION OF TRIALKENYL PHOSPHITES

Arthur D. F. Toy, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,990
Int. Cl. C07f *9/08*
U.S. Cl. 260—982 3 Claims

A procedure for preparing a trialkenyl phosphite is disclosed, said procedure comprising reacting trimethyl phosphite and an alkenol in the presence of a non-azeotropic solvent. The use of a solvent which does not form an azeotrope with methyl alcohol, the by-product of the reaction of an alkenol with trimethyl phosphite, has led to improved product yield and purity as well as an extremely rapid reaction rate.

3,636,146

PREPARATION OF DIALKENYL PHOSPHONATES

Arthur D. F. Toy, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 24, 1969, Ser. No. 810,026
Int. Cl. C07f *9/40*
U.S. Cl. 260—982 7 Claims

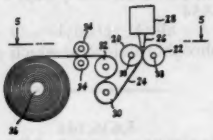
A procedure for preparing a dialkenyl phosphonate is disclosed, said procedure comprising reacting dimethyl phosphonate and an alkenol in the presence of a non-azeotropic solvent. The use of a solvent which does not form an azeotrope with methyl alcohol, the by-product of the reaction of an alkenol with dimethyl phosphonate, has led to improved product yield and purity as well as an extremely rapid reaction rate.

3,636,147

METHOD FOR MAKING SHEET MATERIAL FOR VISUAL PATTERN EFFECTS

William P. Rowland, Southington, Conn., assignor to Rowland Products, Incorporated, Kensington, Conn.

Filed Jan. 14, 1969, Ser. No. 791,041
Int. Cl. B29d 11/00; B29c 15/00
U.S. Cl. 264—1 11 Claims



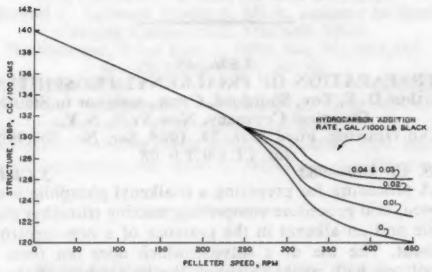
A process for making sheet material providing visual pattern effects utilizes two embossing rolls each having a multiplicity of closely spaced cavities therein to provide embossments on both surfaces of heated synthetic plastic sheet material passing therebetween. The speed of one or both rolls is varied so as to vary the period for the embossments of one surface to phase in and out of axial alignment with the embossments of the other surface, thereby providing varying visual patterns along the length of the sheet material.

3,636,148

CARBON BLACK PELLETING

John E. Slagel, Orange, Tex., assignor to Phillips Petroleum Company

Filed Aug. 7, 1969, Ser. No. 848,277
Int. Cl. B01j 2/12
U.S. Cl. 264—40 10 Claims



A method for controlling the structure of a pelleted carbon black which involves pelleting the black in the presence of a hydrocarbon and controlling either the speed of the pelleter or the rate of addition of hydrocarbon, or both, to produce a pelleted black of a desired structure.

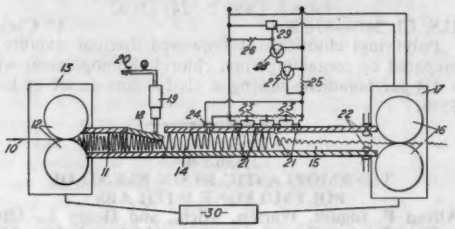
3,636,149

CRIMPING OF YARN

Angelo Luigi Alfredo Tambini, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 718,266, Apr. 2, 1968. This application Dec. 22, 1969, Ser. No. 887,425
Int. Cl. D02g 1/12
U.S. Cl. 264—40 27 Claims

The improvement in methods and apparatus for controlling stuffing box crimping comprising photocell measuring means arranged to provide a signal smoothly related to the amount of yarn in the buffer chamber. The ratio of withdrawal to delivery of the yarn is controlled thereby maintaining the amount of yarn in the buffer chamber constant with the counter-pressure measurement regulator maintaining the controlled ratio at a constant value.



3,636,150

PROCESS FOR PREPARING CELLULOSE ESTER REVERSE OSMOSIS MEMBRANES ON FLEXIBLE WEBS HAVING ENHANCED RELEASABILITY

Martin E. Rowley, Hilton, and Walter D. Slowig and Carl F. Smith, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,905
Int. Cl. B29c 1/04; B29d 27/04; B44d 5/02
U.S. Cl. 264—41 5 Claims

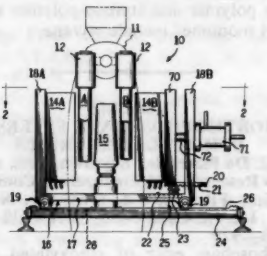
It has been found that when flexible webs (such as those of polymeric films having good dimensionable stability and substantially no solubility in the dope systems being used) are utilized as temporary supports upon which cellulose ester dope solutions are cast in the manufacture of "reverse osmosis" membranes, the resulting gelled membranes are ordinarily difficult to remove from the flexible web. Dramatically enhanced releasability of the gelled membranes from such flexible supports results if the surface of the flexible support is first made very hydrophylic.

3,636,151

METHOD FOR PRODUCING A HOLLOW DOUBLE-WALL PLASTIC ARTICLE

Tomomasu Nagai, Tokyo, Japan, assignor to Kyoraku Kogyo Co., Ltd., Kamigyo-ku, Kyoto, Japan

Filed Apr. 27, 1970, Ser. No. 32,109
Int. Cl. B29c 17/07
U.S. Cl. 264—89 4 Claims



A method for forming a hollow double-wall plastic article comprises positioning at least two tubular plasti-

cized parisons of plastic material at opposite sides of at least one core of a mold, closing half-molds of the mold about the parisons and the core to enclose said parisons, blowing the parisons into contact with the cavity faces by introducing fluid pressure medium into the parisons and removing the finished article from the mold after curing the article. Further, an apparatus for the said method comprises a pair of extrusion nozzles positioned parallel to each other, a mold including a pair of half-molds and at least one core member, means for opening and closing the half-molds and means for introducing fluid pressure medium into the enclosed parisons.

3,636,152

METHOD FOR THE CATALYTIC HYDROGENATION OF ORGANIC NITRO DERIVATIVES IN THE GASEOUS STATE TO CORRESPONDING AMINES

Laszlo Szigeth, Basel, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Filed Nov. 25, 1968, Ser. No. 778,524
Claims priority, application Switzerland, Dec. 12, 1967, 16,900/67
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 **1 Claim**

A process for the catalytic hydrogenation of organic nitro derivatives into amines including evaporating a liquid nitro derivative in a hot stream of gas comprised substantially of hydrogen by atomizing the nitro derivative with the aid of hydrogen, circulating the stream of gas in a closed circuit to cause catalytic hydrogenation of the stream of gas, condensation of reaction products and return of the nitro derivative to a fluid state, and separating amines from the condensed reaction products.

3,636,153

PROCESS FOR THE PRODUCTION OF METHYLAMINE TOGETHER WITH DIMETHYLAMINE

Edgar Enders, Cologne-Flittard, and Dieter Hüllstrung, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,111
Claims priority, application Germany, Mar. 5, 1968, P 16 68 906.8
Int. Cl. C07c *85/00, 87/08*
U.S. Cl. 260—583 J **9 Claims**

Process for producing methylamine and dimethylamine by passing a mixture of carbon monoxide, hydrogen and nitrogen over a catalyst containing zirconium or hafnium at a temperature of about 300° to 600° C.

3,636,154

METHOD OF PREPARING BIS-DIFLUORO-AMINO-BIS-NITROAMINO-ALKANES

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 26, 1963, Ser. No. 268,535
Int. Cl. C07c *87/22, 111/00*
U.S. Cl. 260—583 C **3 Claims**

1. The method of preparing a compound of the formula

$$\begin{array}{cc} HN-R'-NH \\ | \quad\quad | \\ NO_2 \quad NO_2 \end{array}$$

wherein R′ is an alkylene group having substituted thereon at each of two adjacent carbon atoms a difluoroamino group, said method comprising reacting a diisocyanate of the formula O=C=N—R—N=C=O wherein R is a lower alkylene group with dinitrogen tetraoxide and tetrafluorohydrazine in an inert organic solvent under superatmospheric pressure at a temperature of about 150° F. to about 250° F.

3,636,155

PROCESS FOR THE PRODUCTION AND RECOVERY OF N,N-DIMETHYLLAURYLAMINE OXIDE

Jorge R. Muratorio, Buenos Aires, Argentina, assignor to Celanese Corporation, New York, N.Y.

No Drawing. Original application Nov. 1, 1967, Ser. No. 679,634. Divided and this application Oct. 27, 1969, Ser. No. 871,805
Int. Cl. C07c *85/16, 87/06*
U.S. Cl. 260—583 D **3 Claims**

A process for the production and recovery of N,N-dimethyllaurylamine oxide which comprises reacting N,N-dimethyllaurylamine with peracetic acid in an organic solvent medium whereby the reaction products form an ammonium acetate salt, treating the ammonium acetate salt so as to remove the acetate radical from the salt and recovering a N,N-dimethyllaurylamine oxide solution having good detergent properties.

3,636,156

PROCESS FOR THE DIRECT PRODUCTION OF KETONES FROM OLEFINS

Atsumu Ozaki and Yoshihiko Morooka, Tokyo, Japan, assignors to Idemitsu Petrochemical Co., Ltd.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,369
Claims priority, application Japan, Apr. 25, 1968, 43/27,839
Int. Cl. C07c *45/04*
U.S. Cl. 260—597 R **5 Claims**

A feed gas comprising an olefin, steam and oxygen is subjected under normal or raised pressure at 150–300° C. to a vapor phase one step reaction. The reaction is conducted in the presence of a complex oxide catalyst comprising molybdenum oxide and at least one of the oxides selected from tin oxide, iron oxide or cobalt oxide.

3,636,157

PREPARATION OF TOLUALDEHYDES

John E. Bozik, Plum Borough, and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,872
Int. Cl. C07c *47/52*
U.S. Cl. 260—599 **10 Claims**

Tolualdehydes are prepared by converting crotonaldehyde over a catalyst comprised of at least one Group *Ib* metal and at least one metal selected from the group consisting of tin and lead.

3,636,158

3-METHOXY-BENZALDEHYDES

David F. Hinkley, Plainfield, and John Budavari, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Jan. 22, 1967, Ser. No. 692,689, now Patent No. 3,506,714, dated Apr. 14, 1970, which is a continuation-in-part of application Ser. No. 405,591, Oct. 21, 1964. Divided and this application June 23, 1969, Ser. No. 870,859
Int. Cl. C07c *47/52*
U.S. Cl. 260—600 **2 Claims**

3-lower alkoxy-4-(1-lower alkoxy-lower alkyloxy)-benzaldehyde compounds are useful as intermediates for pharmaceutical products.

3,636,159

HYDROFORMYLATION PROCESS AND CATALYST

Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 19, 1968, Ser. No. 785,121
Int. Cl. C07c *45/16*
U.S. Cl. 260—604 HF **12 Claims**

Hydroformylation reactions are carried out in the presence of a catalyst comprising a solid polymer of a pyri-

dine having associated therewith a metal of the group cobalt, rhodium, ruthenium, platinum and palladium. The polymer, which can be formed in part of a polyvinylaromatic compound, is used to remove catalyst residues from hydroformylation reaction effluent streams.

3,636,160

TRISHYDROXYMETHYL PHOSPHINE OXIDE FROM PHOSPHINE AND FORMALDEHYDE

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed July 13, 1970, Ser. No. 54,577

Int. Cl. C07f *9/02*

U.S. Cl. 260—606.5 P **10 Claims**

A process is described for the preparation of tris (hydroxymethyl) phosphine oxide (THPO) by a direct two-step process of reacting phosphine and excess formaldehyde under pressure of about 4 to about 15 atmospheres at a temperature of from 25 to 70° C., whereby a tris (hydroxymethyl) phosphine hemiacetal solution is obtained which is then treated with a hydroxide catalyst to obtain THPO.

3,636,161

SYNTHESIS OF GEM-DIHALOCYCLOPROPANE COMPOUNDS

Gene C. Robinson, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,358

Int. Cl. C07c *43/32*

U.S. Cl. 260—611 R **16 Claims**

Hydrolysis of tris - (2,2-dihalocyclopropylcarbinyl)-orthoformate gives 2,2-dihalocyclopropyl carbinol. These orthoformates, which can be prepared by reacting triallyl-orthoformate with an alkali metal hydroxide and a haloform, and the carbinols resulting from the hydrolysis reaction are useful as germicides, insecticides, miticides and fungicides, and as chemical intermediates.

3,636,162

ETHER PRODUCTION

Harold Chung and Wilhelm Keim, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 653,032, July 13, 1967. This application Oct. 27, 1969, Ser. No. 869,931

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 D **4 Claims**

Aromatic 2,7-alkadienyl ethers are produced by a dimerization-addition reaction of phenols with conjugated alkadienes, e.g., butadiene, in the presence of nickel complexed with triaryl phosphite ligands. The unsaturated ethers are useful for conversion to epoxides.

3,636,163

METHOD OF PREPARING TRANSPARENT PRODUCTS CONSISTING LARGELY OF POLYEPIBROMOHYDRIN

Herbert Jenkner, Cologne-Deutz, and Walter Büttgens, Cologne-Gremberg, Germany, assignors to Chemische Fabrik Kalk G.m.b.H.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,795

Claims priority, application Germany, Sept. 12, 1968, P 17 93 404.2

Int. Cl. C07c *41/02, 43/00*

U.S. Cl. 260—615 B **3 Claims**

Light-colored polyepibromohydrin is made by polymerizing epibromohydrin with the aid of a Friedel-Crafts catalyst in the presence of an organic derivative of phosphonic acid, e.g., glycidyl phosphonic acid diethyl ester, triethyl phosphite, or the like, preferably in solution in an inert liquid solvent, e.g., a liquid halogenated hydrocarbon.

3,636,164

TETRAHYDROXYLIC ORGANO COMPOUNDS AND THE PROCESS FOR PREPARING THE SAME

Andre Lakodey and Francis Weiss, Pierre-Benite, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Jan. 22, 1968, Ser. No. 699,290

Claims priority, application France, Jan. 20, 1967, 91,856

Int. Cl. C07c *43/02*

U.S. Cl. 260—615 R **5 Claims**

Tetrahydroxylic organo compounds such as 1-hydroxyethyleneoxy-2 - methylol - 2,6 - hexanediol, 1 - hydroxydiethyleneoxy-2-methylol - 2,6 - hexanediol, 1- hydroxypropyleneoxy-2-methylol-2,6 hexanediol and 1-hydroxydipropyleneoxy-2-methylol-2,6-hexanediol are prepared from their corresponding 1-[hydroxyalkyleneoxymethyl] - 6,8-dioxabicyclo[3.2.1]octanes by hydrolysis and hydrogenation in a non-alkaline medium and in the presence of a hydrogenation catalyst.

3,636,165

INDANOL DERIVATIVES AND PROCESSES FOR PRODUCING SAME

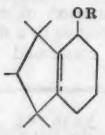
John B. Hall, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Aug. 18, 1969, Ser. No. 851,076

Int. Cl. C07c *35/22*

U.S. Cl. 260—617 F **6 Claims**

Novel hydrogenated indanol derivatives having the formula



wherein R is hydrogen, alkyl, or acyl; perfume compositions containing such indanols and processes for producing same.

3,636,166

DIPHENYLMETHYLENE SPIRANES

Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 10, 1969, Ser. No. 815,512

Int. Cl. C07c *39/08, 39/12*

U.S. Cl. 260—619 A **1 Claim**

Diarylmethylene spiranes, processes for the preparation of the same and intermediates produced by said processes. The compounds have utility as antifertility agents, lipid normalizing agents, central nervous system agents, estrogens and estrogen antagonists.

3,636,167

TREATMENT OF ACETYLENIC GLYCOLS

Robert J. Tedeschi, Whitehouse Station, and Herbert C. McMahon, Basking Ridge, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Nov. 14, 1969, Ser. No. 877,035

Int. Cl. C07c *33/04, 33/06, 35/02*

U.S. Cl. 260—638 Y **7 Claims**

Acetylenic carbinols are prepared from acetylenic glycols by continuously adding distillation residues from reactions between an acetylenic hydrocarbon and a carbonyl compound to a slurry of an alkali metal carbonate in mineral oil maintained at elevated temperatures and reduced pressures whereby cleavage of the glycols is effected and the resultant acetylenic carbinols are recovered.

3,636,168

PREPARATION OF POLYNUCLEAR AROMATIC COMPOUNDS

Roy R. Josephson, West Marlborough Township, Chester County, Pa., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,937
Int. Cl. C07c *79/10, 79/12*
U.S. Cl. 260—645 9 Claims

A process is provided for the coupling of aromatic compounds to produce polynuclear aromatic compounds wherein the reaction is carried out in liquid hydrogen fluoride by contacting the aromatic compound with a mixture of a mercuric salt and a catalytic amount of a noble metal salt, the noble metal being palladium, rhodium, ruthenium or gold.

3,636,169

PROCESS FOR THE PRODUCTION OF 1,1,1-TRIFLUORO-2-MONOCHLORO - 2 - MONOBROMOETHANE BY DEBROMINATION OF 1,1,1-TRIFLUORO - 2 - MONOCHLORO - 2,2-DIBROMOETHANE

Andrea Scipioni and Giampaolo Gambaretto, Padova, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,047
Int. Cl. C07c *19/08*
U.S. Cl. 260—653 6 Claims

The invention is concerned with a process for the production of 1,1,1 - trifluoro - 2-chloro-2-monobromethane which comprises reacting 1,1,1-trifluoro-2-chloro-2,2-dibromoethane with an alcohol selected from aliphatic and aromatic alcohols in alkaline phase, the molar ratio between alcohol and 1,1,1-trifluoro-2-chloro-2,2-dibromoethane being at least equal to 1.

3,636,170

PROCESS FOR PREPARING HALOGENATED AROMATICS

Vincent A. Notaro, Monroeville, and Charles M. Selwitz, Pitcairn, Pa., assignors to Gulf Research & Development Company

No Drawing. Filed July 3, 1969, Ser. No. 839,042
Int. Cl. C07c *25/04*
U.S. Cl. 260—650 R 10 Claims

A process for preparing a nuclear chloro or nuclear bromo aromatic compound which involves heating an aromatic compound in the presence of a nitrate ion, a nitrite ion, NO or NO_2, a chloride or bromide ion, water, oxygen and a strong acid.

3,636,171

SELECTIVE CHLORINATION OF BENZENE AND CHLOROBENZENE USING A CATALYST OF ALUMINUM CHLORIDE AND STANNIC CHLORIDE OR TITANIUM TETRACHLORIDE

Karl L. Krumel, Midland, and James R. Dewald, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,900
Int. Cl. C07c *25/06, 25/08*
U.S. Cl. 260—650 R 6 Claims

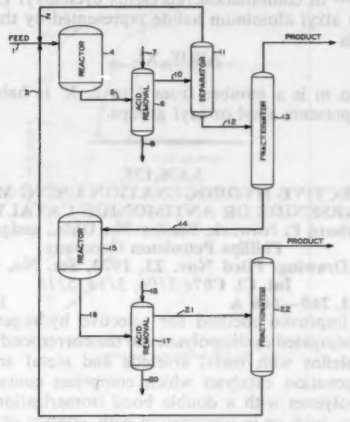
By conducting the reaction of chlorine with benzene or chlorobenzene in the presence of a small but effective amount of a catalyst containing 1 to 25% by weight of aluminum chloride and 75 to 99% by weight of stannic chloride, titanium tetrachloride or mixture thereof, high yields of the monochlorinated product are obtained, high para to ortho isomer ratios in the dichlorinated product are realized and chlorine is efficiently employed in the reaction.

3,636,172

DEHALOGENATION OF FLUOROHALOCARBONS

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 29, 1969, Ser. No. 872,007
Int. Cl. C07c *17/34, 21/18*
U.S. Cl. 260—635.5 4 Claims



Fluorohalocarbons are dehalogenated to produce fluoroolefins by contacting first in the presence of hydrogen with a first catalytic composition containing fluorine under mild hydrogenolysis conditions to generate a fluorohalohydrocarbon, followed by contacting with a second catalytic composition containing a metal oxide or metal salt under more severe conditions in the absence of hydrogen to form increased yields of fluoroolefins.

3,636,173

HYDRODEHALOGENATION PROCESS AND CATALYST

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 584,334, Oct. 5, 1966. This application July 28, 1969, Ser. No. 845,545
Int. Cl. C07c *17/00, 21/18*
U.S. Cl. 260—653.5 5 Claims

Fluorohalocarbons are dehalogenated by contact in the presence of hydrogen with a catalytic composition containing aluminum fluoride and at least one metal phosphate.

3,636,174

PROCESS FOR PREPARING CYCLODODECATRIENE

Katsuyuki Nakamura, Tokyo, Masanori Tanabe, Asaka, Yoshiyuki Mizoguchi, Iruma-gun, and Hirohisa Fukuda, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,823
Claims priority, application Japan, Aug. 12, 1969, 44/63,275; Sept. 10, 1969, 44/71,204; Sept. 16, 1969, 44/72,994; Dec. 22, 1969, 44/102,567; Mar. 18, 1970, 45/22,262
Int. Cl. C07c *3/00*
U.S. Cl. 260—666 B 13 Claims

Process for preparing cyclododecatriene by cyclizably trimerizing 1,3-butadiene which comprises using a

binary catalyst obtained by reacting at a temperature in the range from 5° to 70° C. a mixture of the two catalytic components, (1) a secondary or tertiary alkoxytitanium compound represented by the general formula

$$Ti(OCR^{I}R^{II}R^{III})_nX_{4-n}$$

wherein n is a positive integer from 1 to 4, X is halogen, alkoxy or phenoxy groups, R^{I} is hydrogen or alkyl group and R^{II} and R^{III} respectively represent alkyl group or $CR^{II}R^{III}$ in combination represents cycloalkyl group and (2) an alkyl aluminum halide represented by the general formula

$$AlR^{IV}_mX'_{3-m}$$

wherein m is a number from 1 to 2, X' is halogen and R^{IV} represents alkyl or aryl groups.

3,636,175

SELECTIVE HYDROGENATION USING METAL ARSENIDE OR ANTIMONIDE CATALYST

Gerhard P. Nowack, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,156
Int. Cl. C07c *5/06, 5/14, 5/16*
U.S. Cl. 260—666 A **10 Claims**

An improved method for selective hydrogenation of non-conjugated cyclic polyenes to the corresponding cyclic monoolefins with metal arsenide and metal antimonide hydrogenation catalysts which comprises contacting the feed polyenes with a double bond isomerization catalyst prior to, with or in conjunction with, contact of the feed.

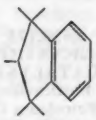
3,636,176

HYDROGENATED INDANE DERIVATIVES AND PROCESSES FOR PRODUCING SAME

John B. Hall, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Aug. 18, 1969, Ser. No. 851,086
Int. Cl. C07c *13/46*
U.S. Cl. 260—666 PY **6 Claims**

A hydrogenated indane derivative having the formula:



wherein the dashed lines represent single or double bonds, no more than two of the dashed lines represent double bonds and, when two double bonds are present, such bonds being conjugated or unconjugated; perfume compositions containing such indanes; and processes for producing same.

3,636,177

PROCESS FOR PRODUCING DURENE

Takashi Suzuki and Hiroyuki Iesaka, Niigata, Japan, assignors to Japan Gas Chemical Company, Inc., Chiyoda-ku, Tokyo, Japan

No Drawing. Filed May 20, 1970, Ser. No. 39,145
Claims priority, application Japan, May 22, 1969, 44/39,121
Int. Cl. C07c *5/28*
U.S. Cl. 260—668 A **7 Claims**

Durene is produced in high yield by isomerizing other tetramethylbenzenes with a HF—BF_3 catalyst in the liquid phase in the presence of a diluent comprising benzene or methyl-substituted benzenes having 9 or less carbon atoms, whereby suppressing disproportionation and transmethylation of tetramethylbenzenes.

3,636,178

PROCESS FOR THE PRODUCTION OF NAPHTHALENE FROM HOMOLOGS OF INDENE, BY PYROLYTIC RING EXTENSION

Heinz-Gerhard Franck and Rudolf Oberkobusch, Duisburg-Meiderich, Johannes Turowski, Castrop-Rauxel, Gerd Collin, Duisburg-Meiderich, Maximilian Zander, Recep Kemalettin Erunlu, Gunter Storch, and Herbert Buffleb, Castrop-Rauxel, and Hans-Dieter Sauerland, Duisburg, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,042
Claims priority, application Germany, Nov. 7, 1968, P 18 07 502.0–42
Int. Cl. C07c *5/26*
U.S. Cl. 260—668 F **12 Claims**

Naphthalene is produced by pyrolytic treatment of indene homologs by passing indene homologs, if desired in mixture with naphthalene and other hydrocarbons, at temperatures in the range of 550 to 800° C. through a pyrolysis zone, separating from the resulting pyrolysis products a condensable naphthalene-containing fraction by distillation and recovering naphthalene from said fraction in conventional manner by cooling, crystallization and centrifuging.

3,636,179

METHOD FOR PRODUCING ETHYLDIPHENYLS SUITABLE AS HEAT TRANSFER MEDIA

Hiroharu Inoue, Kitakyushu-shi, Kenichi Fujimoto, Fukuoka-ken, and Yasushi Suenaga, Kitakyushu-shi, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1969, Ser. No. 884,583
Claims priority, application Japan, Dec. 21, 1968, 43/93,476, 43/93,477
Int. Cl. C07c *15/14, 15/04*
U.S. Cl. 260—668 R **8 Claims**

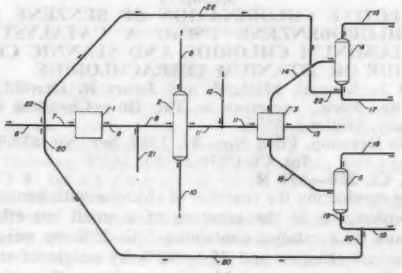
Minimization of the formation of 2-ethyldiphenyl and 9-methylfluorene in the production of ethyldiphenyls is possible by carrying out the reaction between diphenyl and ethylbenzenes in the presence of a Friedel-Crafts catalyst with a molar ratio of ethylbenzenes to diphenyl of at least 1.5, at a temperature of 70–130° C. and keeping the conversion of diphenyl below 75% by weight.

3,636,180

COMBINATION ISOMERIZATION AND AROMATIC SEPARATION PROCESS

Donald B. Broughton, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 30, 1969, Ser. No. 889,116
Int. Cl. C07c *5/24, 7/12*
U.S. Cl. 260—668 A **32 Claims**



A combination process for the production and recovery of a particular aromatic hydrocarbon. The combina-

tion process comprises an isomerization zone which is operated in conjunction with a separation zone. The separation zone effects the selective adsorption of a particular aromatic compound passed to the separation zone thereby rendering two streams concentrated in certain aromatic components. One of the streams concentrated in the certain aromatics is recycled to an isomerization zone where additional production of feed components is effected allowing an eventual complete production of a particular product produced by the isomerization zone. Feed streams can be passed directly into the adsorption zone or into the isomerization zone depending on the feed composition.

3,636,181

DIFUNCTIONAL MONOMERS FROM VINYL SUBSTITUTED BENZYL CHLORIDES AND CHLOROMETHYL BUTADIENE AND POLYMERS PREPARED THEREFROM

Giffin D. Jones and Mary R. Thomas, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 28, 1969, Ser. No. 820,022

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 **6 Claims**

Difunctional monomers of the type 2-(vinylphenethyl)-1,3-butadiene are prepared by making the Grignard of the vinyl benzyl chloride compounds followed by inverse Grignard coupling with 2-chloromethyl 1,3-butadiene. The monomers are useful in making graft, branched or cross-linked polymers and copolymers.

3,636,182

PREPARATION OF STYRENES

George J. Kallos, Saginaw, and Che-I Kao, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 14, 1969, Ser. No. 877,002

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 **17 Claims**

The vapor phase reaction for producing styrenes from toluenes and methyl chloride is promoted by methyl bromide, methyl iodide, hydrogen bromide, hydrogen iodide, bromine, and iodine.

3,636,183

PROCESS FOR THE DEHYDROGENATION OF ORGANIC COMPOUNDS

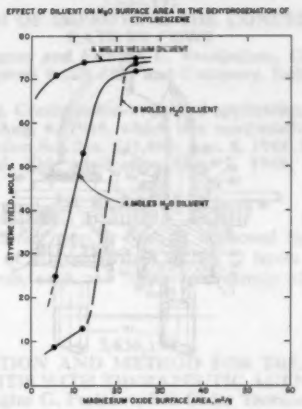
Israel S. Pasternak, Noel J. Gaspar, Abraham D. Cohen, and Mohan Vadekar, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 780,528, Dec. 2, 1968. This application Dec. 19, 1969, Ser. No. 886,582

Int. Cl. C07c *5/20, 11/02, 15/10*

U.S. Cl. 260—669 **18 Claims**

Organic compounds having a dehydrogenatable carbon to carbon bond, e.g. ethylbenzene, are dehydrogenated in a vapor phase reaction by contact with a sulfur oxide in the presence of steam over a critically defined low surface area magnesium oxide catalyst. The temperature at which the reaction is conducted is generally in the range of from about 800 to about 1500° F. The molar ratio of the steam to the dehydrogenatable organic compound is at least about 1:1, preferably a molar ratio of about 10 moles of steam per mole of dehydrogenatable compound is employed. The amount of sulfur oxide employed in the reaction is in the range of from about 0.01 to 1.0 and more preferably from about 0.2 to 0.7 mole of sulfur dioxide per mole of hydrogen extracted from the dehydrogenatable organic compound. For example, the dehydrogenatable compound is ethylbenzene, which is converted by the above-described reaction to styrene, an important petrochemical intermediate for the production of synthetic rubber and of polystyrene plastics.


EFFECT OF DILUENT ON MgO SURFACE AREA IN THE DEHYDROGENATION OF ETHYLBENZENE
8 MOLES HELIUM DILUENT
8 MOLES H2O DILUENT
4 MOLES H2O DILUENT
STYRENE YIELD, MOLE %
MAGNESIUM OXIDE SURFACE AREA, m²/g

3,636,184

PROCESS FOR PRODUCTION OF 1,3-DIMETHYL-5-ISOPROPYLBENZENE

Gunter Strehlke, Moers, and Gundolf Fuchs, Steinbeck-Meilsen, Germany, assignors to Deutsche Texaco Aktiengesellschaft

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,269

Claims priority, application Germany, Dec. 5, 1968, P 18 12 781.6

Int. Cl. C07c *3/50, 3/58*

U.S. Cl. 260—672 T **7 Claims**

A multiple step reaction process produces a product composed primarily of high purity 1,3-dimethyl-5-isopropylbenzene with lower concentrations of dimethyldiisopropylbenzenes than obtained heretofore. In the process, a mixture of xylenes is combined with dimethyldiisopropylbenzene in the presence of aluminum chloride for over seven hours, then propylene is added to complete the reaction.

3,636,185

PROCESS OF MODIFYING THE SURFACE OF FIBROUS MATERIALS

James Nelson Ruddell, Portadown, and Herbert Alexander Conway Todd, Lisburn, Northern Ireland, assignors to Lambeg Industrial Research Association

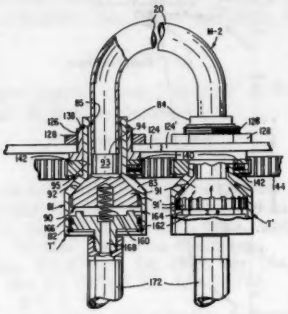
No Drawing. Filed May 3. 1967, Ser. No. 637,317

Int. Cl. B28b *11/04;* **B29d** *7/24*

U.S. Cl. 264—131 **3 Claims**

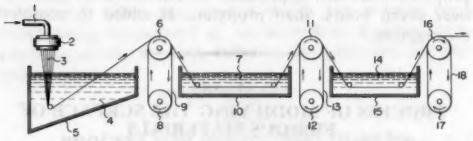
Plastic film is drawn in a single direction to orient its molecules, and thereafter fibrillated. Prior to drawing, or subsequent to drawing but prior to fibrillation, or after fibrillation has begun, one or both surfaces of the film are modified in a way such that the effect of the modification is present in the resulting fibrous material. Modification may be vacuum deposition of metal, embossing, embedding particles, printing, or flocking.

3,636,186
BONDING OF TUBE JOINTS
Richard A. Sturley, Kirkville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 19, 1969, Ser. No. 825,696
Int. Cl. B29c 17/10; B29f 1/10
U.S. Cl. 264—135 1 Claim



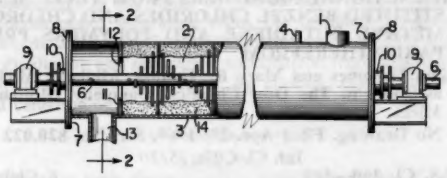
The present invention is directed to the bonding of tube joints exemplified by the securement of bell and spigot tube ends on plate fin or spiral fin coil units employed in refrigeration apparatus, the bonding process being characterized in part by accurate metering of a predetermined quantity of a thermosetting structural adhesive to particular locations on the mating tube joint members and productive of an extremely high strength bond therebetween resistive to deterioration after long exposure to normal environmental conditions.

3,636,187
PROCESS FOR THE MANUFACTURE OF ACRYLONITRILE SYNTHETIC FIBERS
Toshio Ohfuka, Hideo Sato, and Kazunori Sagara, Fuji, Shizuoka Prefecture, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan
Filed Nov. 4, 1968, Ser. No. 772,955
Claims priority, application Japan, Nov. 9, 1967, 42/71,692
Int. Cl. D01f 7/00
U.S. Cl. 264—182 5 Claims



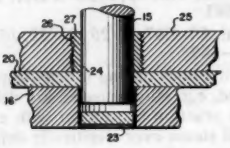
This invention concerns a process for the manufacture of acrylonitrile synthetic fibers wherein an acrylonitrile polymer is dissolved in nitric acid for providing a spinning liquid which is extruded into a coagulation bath and coagulated filaments are then taken out from the coagulation bath and washed with fresh water and finally dried. In this process, said spinning liquid is passed through a gaseous medium space provided above the free liquid surface of said bath under conditions such that evaporation of the solvent nitric acid contained in the extruded spinning liquid is suppressed and the degree of swelling of the produced filaments is maintained to less than 350 wt. percent and less than 300 wt. percent when measured upon the coagulation and water-washing operations for obtaining improved characteristics of the produced fibers.

3,636,188
PROCESS FOR WET PELLETIZING CARBON BLACK
Richard E. Driscoll, Monroe, La., assignor to Cities Service Company
Filed Nov. 26, 1969, Ser. No. 880,017
Int. Cl. B01j 2/12
U.S. Cl. 264—117 5 Claims



Wetted particles of carbon black are agitated in an elongated cylindrical conduit to form wet pellets of the particles. Agitation is accomplished by means of revolving agitation members which also move the particles toward a discharge outlet through which wet pellets are removed from the zone of agitation. The amount of work expended in agitating and axially advancing the particles within the conduit is increased by (1) revolving the agitating members fast enough to sling the particles out toward the conduit wall and thus shape the particles into an annular bed by centrifugal force, and (2) compressing the axially advancing bed, by revolution of the members, against a dam which extends around the periphery of the pelletizing zone and projects inwardly toward the center of the zone.

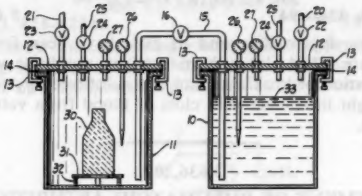
3,636,189
METHOD FOR PRODUCING A PUNCH PRESS GUIDE
Helmut Wurm, Mariahallstr. 15, Sprendlingen, Hesse, Germany, and Kurt Wurm, 42 Herrnrotherstr., 6079 Sprendlingen, Hesse, Germany
Filed Apr. 25, 1969, Ser. No. 819,388
Claims priority, application Germany, Apr. 26, 1968, P 17 78 405.3
Int. Cl. B29c 1/02
U.S. Cl. 264—219 5 Claims



An accurately centered guide for a punch is produced by placing a pliable transparent sheet over the die, moving the punch through an oversized guide bore into contact with the sheet, accurately centering the punch in the bore with the aid of pressure marks stamped into the surfaces

of the sheet by the punch, and casting a hardenable resin into the bore around the punch to provide a guide lining for the punch in the bore.

3,636,190
METHODS OF REMOVING PATTERNS FROM INVESTMENT MOLDS
Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc.
Filed Sept. 25, 1967, Ser. No. 670,050
Int. Cl. B22c 9/04; B29c 1/02
U.S. Cl. 264—221 **12 Claims**



A method of removing patterns from an investment mold including the steps of subjecting the mold to a heated medium at a temperature sufficient to melt or soften the pattern material and to an external pressure sufficient to resist the cracking forces produced by the pattern material as it is heated.

3,636,191
VACCINE AGAINST VIRAL HEPATITIS AND PROCESS
Baruch S. Blumberg, Glenside, and Irving Millman, Willow Grove, Pa., assignors to The Institute for Cancer Research, Philadelphia, Pa.
Filed Oct. 8, 1969, Ser. No. 864,788
Int. Cl. A61k 27/00
U.S. Cl. 424—89 **9 Claims**

A vaccine against viral hepatitis is derived from blood containing Australia antigen, having particles resembling viruses which are substantially free from nucleic acid, of a size range of 180 to 210 A., substantially free from infectious particles. The vaccine where required is attenuated or altered. The preferred procedure for removing impurities including infectious components involves centrifugation, enzyme digestion, column gel filtration, differential density centrifugation in a solution of sucrose, dialysis, differential density centrifugation in a solution of cesium chloride, and dialysis.

3,636,192
MENINGOCOCCAL POLYSACCHARIDE VACCINES
Emil C. Gotschlich, Hastings-on-Hudson, N.Y., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Jan. 13, 1970, Ser. No. 2,661
Int. Cl. A61k 27/00
U.S. Cl. 424—92 **7 Claims**

This disclosure describes a process for preparing and isolating antigenic group-specific polysaccharides of serologic group A and group C meningococci used as vaccines. The process employs a cationic substance, such as hexadecyl trimethylammonium bromide, to precipitate the polysaccharide from the whole culture. The antigenic polysaccharides isolated by this process are of high molecular weight (molecular weight 60,000–5,000,000). The main constituent of the antigenic group A polysaccharide is N-acetyl, O-acetyl mannosamine phosphate and the main constituent of the antigenic group C polysaccharide is N-acetyl, O-acetyl neuraminic acid. The two antigenic polysaccharides are useful for producing immunity against meningococcal meningitis in humans.

3,636,193
METHOD OF IMPROVING THE CONCEPTION RATE IN COWS
Jack F. Wagner and Edward L. Veenhuizen, Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Continuation-in-part of application Ser. No. 750,489, Aug. 6, 1968, which is a continuation-in-part of application Ser. No. 541,086, Apr. 8, 1966, both now abandoned. This application Mar. 7, 1969, Ser. No. 805,344
Int. Cl. A61k 17/06
U.S. Cl. 424—100 **5 Claims**

The pregnancy rate in cows is improved by the administration of a gonadotropin within 72 hours after the onset of estrus, each cow being bred shortly after onset of estrus.

3,636,194
COMPOSITION AND METHOD FOR TREATING MASTITIS WITH THERAPEUTIC AGENTS
Douglas G. Parizeau, 842 Cedar Terrace, Westfield, N.J. 07090
No Drawing. Continuation-in-part of application Ser. No. 580,862, Sept. 21, 1966. This application Oct. 23, 1969, Ser. No. 868,907
Int. Cl. A61k 21/00
U.S. Cl. 424—115 **16 Claims**

Preparations and methods for treating animal mastitis as by intramammary infusion involve a composition comprising therapeutic agent material in an oil base containing lecithin-type material that consists essentially of alcohol-soluble phospholipid or phospholipids, whereby distribution of the composition in the affected region is promoted, with further improved results, e.g. in avoiding adverse effects on the therapeutic agent material and in affording short milk-out times.

3,636,195
GROWTH STIMULATING ANIMAL FEEDS
William Joye Monson, Elgin, Ill., assignor to Borden, Inc., New York, N.Y.
No Drawing. Filed Sept. 10, 1968, Ser. No. 758,706
Int. Cl. A61k 27/00
U.S. Cl. 424—115 **10 Claims**

This invention relates to animal feeds containing nutritionally balanced basal feeds and a growth promoting composition consisting essentially of a feed supplement selected from the group consisting of fermentation products, distillers' products and mixtures thereof, and a taurine compound being present in amount sufficient to promote growth at a rate greater than said feed supplement alone, greater than said taurine compound above, and greater than the additive effects thereof.

3,636,196
ETHYLETHYLENEIMINE AS AN INACTIVATION AGENT
Kurt Bauer, Gunther Wittman, and Manfred Mussgay, Tubingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 8, 1970, Ser. No. 35,932
Claims priority, application Germany, May 13, 1969, P 19 34 303.9
Int. Cl. A61k 27/00
U.S. Cl. 424—89 **12 Claims**

Ethylethyleneimine is used as an inactivation agent in the production of inactivated antigens such as virus vaccines for pharmaceutical preparations.

3,636,197

JOSAMYCIN AND PRODUCTION THEREOF

Hamao Umezawa and Takashi Osono, Tokyo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 462,307, June 8, 1965. This application Dec. 8, 1966, Ser. No. 600,274

Claims priority, application Japan, June 9, 1964, 39/32,400

Int. Cl. A61k *21/00*

U.S. Cl. 424—121 14 Claims

Josamycin, a new antibiotic substance, is produced by culturing a strain of *Streptomyces narbonensis* var. *josamyceticus*. Josamycin is useful in the treatment of infections in animals, because it is effective in inhibiting the growth of Gram-positive bacteria.

3,636,198

VENTURICIDIN B AND X AND PROCESS FOR THEIR MANUFACTURE

Hans Zaehner, Tubingen, Germany, and Walter Keller, Dubendorf-Zurich, Switzerland, assignors to Ciba Corporation, New York, N.Y.

Filed June 25, 1968, Ser. No. 739,713

Claims priority, application Switzerland, June 30, 1967, 9,324/67; Dec. 20, 1967, 17,886/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—122 9 Claims

Venturicidin B and/or X useful especially as antifungal agents and process for their manufacture.

3,636,199

SYNTHETIC BOARD INLAID WITH MOISTURE-CURE URETHANE AND METHOD THEREFOR

Theodore E. Jenks, Hopewell, Va., and Edward R. Bittner, Carteret, N.J., assignors to Allied Chemical Corporation, New York, N.Y., and Essex Chemical Corporation, Clifton, N.J., fractional part interest to each

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,576

Int. Cl. B29c *19/20;* B29j *5/60;* B32b *27/40*

U.S. Cl. 264—134 8 Claims

Production of synthetic boards inlaid with moisture-cure urethane compositions by compressing cellulosic material and resin binder containing moisture at a temperature within the range of 60–100° F. to form a synthetic board substrate. A moisture-cure urethane coating composition having free-isocyanate groups is applied to the synthetic board substrate which is then compressed at a temperature above 200° F. for at least 1 minute.

3,636,200

PHARMACEUTICAL SUSPENSION

Margaret Rose Zentner, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 9, 1969, Ser. No. 831,721

Int. Cl. A61k *27/06*

U.S. Cl. 424—154 9 Claims

Palatable, stable, thixotropic pharmaceutical suspensions with desirable viscosity, suspendability, and reversible gel-sol-gel forming flow properties consisting of an active ingredient comprising in combination (a) a reaction product of a therapeutically active drug substance which is otherwise bitter tasting because it is weakly basic and which contains a secondary or tertiary nitrogen in combination with a complex magnesium aluminum silicate and (b) a product consisting essentially of microcrystalline cellulose containing from about 8 to about 12% by weight sodium carboxymethylcellulose, are disclosed.

3,636,201

ACCELERATING THE LYSIS OF BLOOD CLOTS WITH UROKINASE AND N-GLYCYLPYRROLIDINE OR SALT THEREOF

Robert Phillip Johnson, Jacksonville, Fla., assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 771,370, Oct. 28, 1968. This application June 19, 1970, Ser. No. 47,909

Int. Cl. A61k *19/00, 27/00*

U.S. Cl. 424—94 5 Claims

N-Glycylpyrrolidine and its salts have been found to potentiate blood clot lysis induced by urokinase when a combination of urokinase and this substituted pyrrolidine is brought in contact with clots of blood from vertebrate animals.

3,636,202

TREATMENT OF RHEUMATOID ARTHRITIS AND RELATED DISEASES

Lewis A. Klein, Silver Spring, Md. (2901 16th St. NW., Washington, D.C. 20009)

No Drawing. Filed Feb. 12, 1968, Ser. No. 704,565

Int. Cl. A61k *27/00*

U.S. Cl. 424—183 10 Claims

There are provided compositions and methods for the treatment of rheumatoid arthritis and related diseases. A first composition contains Histamine, Serotonin and Heparin which is effectively administered with a second composition of oxytetracycline, lincomycin and nicotinic acid. The two compositions are periodically administered according to a regimen of increasing dosages of the first mentioned composition. Thereafter, the first mentioned composition is discontinued and the second mentioned composition is administered on a sustaining basis.

3,636,203

POULTRY FEED ADDITIVE FOR TREATING FATTY LIVER

Tibor L. Kopjas, Collinsville, Ill., assignor to Ilona Kopjas, executrix of the estate of Tibor L. Kopjas, deceased

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,911

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 2 Claims

An additive for conventional poultry feed comprising no less than one percent (1%) by weight of said feed of granulated dehydrated garlic, with the latter being intermixed with the mash to regenerate fatty liver caused by a diet high in cholesterol.

3,636,204

BICYCLOALKYL PHOSPHATE INSECTICIDES

Peter E. Newallis, Leawood, Kans., and Zafarullah K. Cheema, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,536

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 14 Claims

S-(N-bicycloalkylcarboxamido) esters of phosphoro (di)thioic acid, phosphono(di)thioic acid, and phosphino

(di)thioic acid are prepared by condensing a salt of the acid with chlorinated N-bicycloalkylcarboxamide. The compounds are useful as insecticides.

3,636,205

INSECTICIDAL PARA-THIOCARBAMOYL-PHENYL PHOSPHOROTHIOATES

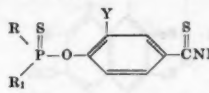
Bernard Miller, Amherst, and Howard Margulies, Stoneham, Mass., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 524,496, Feb. 2, 1966, now Patent No. 3,480,697. This application Nov. 18, 1969, Ser. No. 877,864

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 **10 Claims**

A process for controlling insect pests which comprises treating an area infested with the same with an effective amount of a compound represented by the formula:



wherein R represents alkoxy having from 2–3 carbon atoms; R_1 represents a lower alkoxy from 1 to 3 carbon atoms, phenyl, chloro- or bromo-substituted (lower)-alkoxy of from 1 to 3 carbon atoms or di(lower alkyl)-amino; and Y is hydrogen, chloro or bromo.

3,636,206

CERTAIN THIOLOPHOSPHONAMIDES AS INSECTICIDES AND ACARICIDES

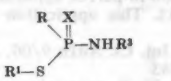
Edmund J. Gaughan, Kensington, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Aug. 16, 1968, Ser. No. 753,050

Int. Cl. A01n *9/36*

U.S. Cl. 424—219 **20 Claims**

Compounds of the formula



in which R is an alkyl group and R^1 is an alkyl, alkenyl or alkynyl group, X is oxygen or sulfur, and R^3 is hydrogen alkyl or alkenyl as insecticides and acaricides.

3,636,207

CASTOR OIL STABILIZED DIMETHYL DICHLOROVINYL PHOSPHATE INSECTICIDAL VAPOR-EMITTING SOLUTIONS

René J. Bouvet, Boulogne, and Jean Georges Daeninckx, Saint-Denis, France, assignors to Societe Anonyme Dite: L'Oreal

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,638

Claims priority, application France, Dec. 20, 1968, 179,697

Int. Cl. A61k *27/12*

U.S. Cl. 424—219 **2 Claims**

A stable and long lasting active insecticidal vapor emitting liquid solution product, which retains insecticidal power for at least three months, is a miscible mixture of dimethyl dichlorovinyl phosphate and 1–99 weight percent castor oil based on the weight of the mixture.

3,636,208

METHOD FOR TREATING MALARIA

Yuichi Yamamura and Tetsuo Yoshinaga, Osaka, and Kiyosh Tsunoda, Yoshiatsu Tsutsumi, and Kazuhiko Hoji, Tokyo, Japan, assignors to Daiichi Seiyaku Company Limited, Tokyo, Japan

No Drawing. Filed Jan. 2, 1970, Ser. No. 378

Claims priority, application Japan, Oct. 28, 1969, 44/85,707

Int. Cl. A61k *27/00*

U.S. Cl. 424—229 **3 Claims**

6-sulfanilamido-4-methoxypyrimidine (sulfamonomethoxine) is clinically useful for treating malaria, and was found to be effective against both the erythrocytic form (blood form) and the exoerythrocytic form (tissue form) of malaria parasites.

3,636,209

COCCIDIOSIS TREATMENT

Leonard M. Weinstock, Rocky Hill, Roger J. Tull, Metuchen, and Peter I. Pollak, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Aug. 1, 1966, Ser. No. 569,014, now Patent No. 3,467,653, dated Sept. 16, 1969, which is a continuation-in-part of application Ser. No. 496,700, Oct. 15, 1965. Divided and this application Apr. 11, 1969, Ser. No. 835,840

Int. Cl. A61k *27/00*

U.S. Cl. 424—229 **16 Claims**

Anticoccidial 3-alkenyloxy (alkynyloxy or alkoxy)-4-sufanilamido-1,2,5-thiodiazoles, or the N^4-acyl derivatives thereof, are prepared by treating a 3-chloro-4-alkenyloxy (alkynyloxy or alkoxy)-1,2,5-thiodiazole with sulfanilamide or an N^4-acylsulfanilamide in the presence of an alkali metal base to produce an alkali metal salt of the sulfathiadiazole which is converted to the free base by acidification of the reaction mixture. It is contemplated that compositions containing such sulfathiodiazoles as the essential active ingredient will be administered orally in treatment and control of coccidiosis in poultry.

3,636,210

CHOLANIC ACID AND CHOLENIC ACID COMPOSITIONS AND METHOD OF TREATMENT

Eugene E. Howe, Somerset, and Jesse W. Huff, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 2, 1968, Ser. No. 702,510

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 **18 Claims**

Pharmaceutical compositions containing (1) a cholanic acid, (2) a nuclear unsaturated cholenic acid or (3) a nuclear hydroxy substituted cholanic acid as the active ingredient. The compositions reduce plasma cholesterol and triglyceride levels in blood serum and, therefore, are useful in the treatment of conditions associated with atherosclerosis.

3,636,211

METHOD FOR FINISHING SWINE FOR MARKET

Charles E. Jordan, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 480,131, Aug. 16, 1965. This application June 2, 1969, Ser. No. 829,782

Int. Cl. A61k *17/06*

U.S. Cl. 424—240 **4 Claims**

Hogs are finished by the simultaneous oral administration of an estrogen and an androgen with improved feed efficiency and carcass quality.

3,636,212

METHOD FOR CONTROLLING RODENTS WITH CERTAIN BIS-AZIRIDINE ACETYL CHEMOSTERILANTS

Wilfred A. Skinner, Portola Valley, and Homer H. C. Tong, San Jose, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed May 1, 1969, Ser. No. 821,121
Int. Cl. A01n 9/22
U.S. Cl. 424—244 1 Claim

Management or control of mammals, e.g. live pests of the type of rodents, such as rats or mice, is accomplished by placing, in an area in which these rodents are to be managed, an effective amount of a certain bis-aziridine acetyl derivative or derivatives of a class defined below.

3,636,213

SOLUBILIZATION OF HEAVY METAL SALTS OF 1-HYDROXY-2-PYRIDINETHIONE

Terry Gerstein, Brooklyn, and William Perlberg, Bellmore, N.Y., and Milton Schwarz, Westport, Conn., assignors to Revlon, Inc., New York, N.Y.

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,604
Claims priority, application Great Britain, Feb. 20, 1967, 8,055/67
Int. Cl. A61k 7/06; A61l 23/00
U.S. Cl. 424—245 6 Claims

Method for solubilizing heavy metal salts of 1-hydroxy-2-pyridinethione by admixture with an amine. Solutions of such salts in amines.

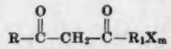
3,636,214

CERTAIN SUBSTITUTED 1,3 DIKETONES AS SOIL FUNGICIDES

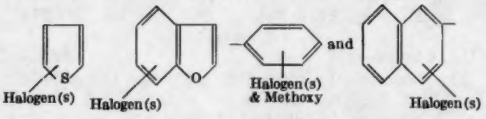
Elton L. Clark, Brookeville, Md., assignor to W. R. Grace & Co.

No Drawing. Continuation-in-part of application Ser. No. 754,971, Aug. 23, 1968. This application July 3, 1969, Ser. No. 846,625
Int. Cl. A01n 9/12
U.S. Cl. 424—245 1 Claim

A soil fungicide and a method for protecting seeds and seedlings from attack by pathogenic organisms which inhabit soil is disclosed which comprises applying an effective amount of selective, substituted 1,3 diketones having the general formula



wherein R represents the following groups



and R_1 represents an alkylene radical containing from 1 to 3 carbon atoms, X is selected from the group consisting of chlorine, bromine, fluorine and iodine, and *m* is an integer from 1 through 7. The diketone can be applied as such or as the metal chelate.

3,636,215

DERIVATIVES OF MALEOPIMARIC ACID, USEFUL AS NEMATOCIDES

Walter H. Schuller and Jacob C. Minor, Lake City, Seymour S. Block, Gainesville, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,921
Int. Cl. A01n 9/00, 9/38
U.S. Cl. 424—245 10 Claims

This invention relates to the use of dialkylaminoalkyl imides of maleopimaric acid as nematocides. It also relates to the analogs, such as salts of the carboxyl group as well as to the quaternary ammonium salts of the dialkylaminoalkyl group as effective nematocides.

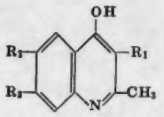
3,636,216

COCCIDIOSIS CONTROL WITH QUINALINOL DERIVATIVES

Robert R. Baron, Edward W. Berndt, Harold E. Van Essen, and Edwin L. Brunsting, Charles City, Iowa, assignors to Salsbury Laboratories

No Drawing. Filed Sept. 26, 1968, Ser. No. 763,018
Int. Cl. A61k 27/00
U.S. Cl. 424—258 5 Claims

Veterinary compositions for the prevention and control of poultry coccidiosis which comprises a solid or liquid ingestible carrier and dispersed therein compounds of the general configuration:



wherein R_1 is H or alkyl groups with 1 to 12 carbon atoms and R_2 and R_3 are H, OH, or alkoxy substituents with 1 to 12 carbon atoms and physiologically acceptable salts of such compounds. The compounds 3-n-heptyl-7-methoxy-2-methyl-4-quinolinol is described as an example.

3,636,217

MILDEWCIDAL COMPOSITION AND METHOD OF USE

Donald R. Arnold, Lincolndale, N.Y., and Anthony A. Sousa, Raleigh, N.C., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Mar. 23, 1966, Ser. No. 536,662, now Patent No. 3,478,043, dated Nov. 11, 1969, which is a continuation-in-part of application Ser. No. 324,183, Nov. 18, 1963. This application June 25, 1969, Ser. No. 836,638
Int. Cl. A01n 9/00, 9/22
U.S. Cl. 424—263 6 Claims

Novel compositions containing oxetanes, such as the 3-oxatricyclo[4.2.1.0]nonanes, as the active ingredient, are useful for controlling mildew.

3,636,218

PHARMACEUTICAL COMPOSITIONS AND METHODS CONTAINING 1,2,3,4-TETRAHYDROBENZOTHIENO[2,3-c]PYRIDINES

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 705,909, Feb. 16, 1968, now Patent No. 3,520,895, and Ser. No. 809,003, Mar. 20, 1969, now Patent No. 3,518,278, which is a continuation-in-part of application Ser. No. 621,475, Mar. 8, 1967. This application Oct. 22, 1969, Ser. No. 868,573
Int. Cl. A61k 27/00
U.S. Cl. 424—263 7 Claims

The compositions contain in combination a pharmaceutical diluent and a 1,2,3,4-tetrahydrobenzothieno[2,3-c]pyridine and are useful as central nervous system depressants and tranquilizing agents. A composition disclosed contains 6-chloro - 1,2,3,4 - tetrahydrobenzothieno[2,3-c] pyridine in combination with a pharmaceutical diluent.

3,636,219

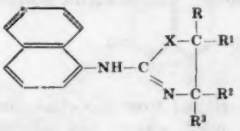
ANTICHOLINERGIC COMPOSITIONS CONTAINING CERTAIN THIAZOLINES OR IMIDAZOLINES

Rudolf Culik, Kennett Square, Pa., and Jurg A. Schneider, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

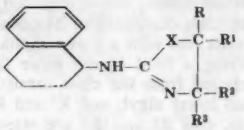
No Drawing. Filed Mar. 2, 1964, Ser. No. 348,884
Int. Cl. A61k *27/00*
U.S. Cl. 424—265 48 Claims

25. A composition comprising from 0.5 to 30 parts by weight of a centrally acting anticholinergic agent and 1 part by weight of a compound of the formula

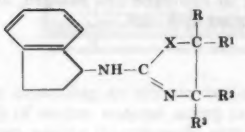
(1)



(2)



(3)



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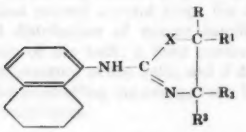
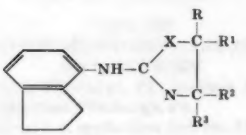
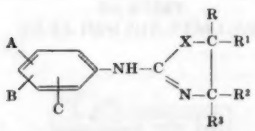


(5)



and

(6)



where in each of the Formulas 1 through 6 X is selected from the group consisting of sulfur and nitrogen; R, R^1, R^2 and R^3 are each separately selected from the group consisting of hydrogen and alkyl of 1 through 4 carbons with the total number of carbons in these four substituents being a maximum of 8; where in each of Formulas 1 through 5, 1 through 3 hydrogen atoms in the moiety selected from the group consisting of naphthyl, partially reduced naphthyl and indanyl can be replaced with a member selected from the group consisting of halogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons, alkylthio of 1 through 4 carbons, trifluoromethyl and trifluoromethoxy; and where in Formula (6) A is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons and halogen; B is selected from the group consisting of alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons and halogen; and C is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons, halogen, alkylthio of 1 through 4 carbons, alkoxyalkyl wherein the alkoxy portion has 1 through 2 carbons and the alkyl portion has 1 through 2 carbons, alkylamino of 1 through 2 carbons, dialkylamino where each alkyl group has 1 through 2 carbons, trifluoromethyl and trifluoromethoxy.

3,636,220

1 - (SUBSTITUTED)-PHENYL - 5 - AMINOTETRAZOLES FOR THE TREATMENT OF INFLAMMATION AND COMPOSITIONS THEREFOR

Takashi Enkoji, Park Forest, and Charles D. Bossinger, Olympia Fields, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 585,251, Oct. 10, 1966. This application July 24, 1969, Ser. No. 844,640
Int. Cl. A61k *27/00*
U.S. Cl. 424—269 7 Claims

Therapeutic treatment of the animal organism with 1-(substituted)-phenyl-5-aminotetrazoles, particularly treatment methods and compositions containing 1-(substituted)-phenyl-5-aminotetrazoles employed to provide relief from inflammatory conditions and muscle tension.

3,636,221

LOCAL ANESTHETICS COMPRISING α-PHENYL-α-ALKYLSUCCINIMIDES

Rune Verner Sandberg, Jarna, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden

No Drawing. Filed Nov. 8, 1968, Ser. No. 774,482
Claims priority, application Sweden, Nov. 29, 1967, 16,406/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 19 Claims

New α-phenyl-α-alkylsuccinimides substituted at the nitrogen atom with an alkylaminoalkyl group are disclosed which are effective as local anesthetics.

3,636,222

AGENTS INHIBITING FUNGUS GROWTH AND METHOD OF CONTROLLING THEREWITH

Jorg Bader, Arlesheim, and Karl Gatzi, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Original application Feb. 19, 1968, Ser. No. 706,614, now Patent No. 3,527,867. Divided and this application Apr. 13, 1970, Ser. No. 32,474
Int. Cl. A61l *13/00*
U.S. Cl. 424—267 5 Claims

Agents for inhibiting the growth of fungi, which contain as active component 5-amino-1,2-dithiol-3-ones substituted at the amino group and also in 4-position, and method of controlling phytopathogenic and other noxious fungi with such agents, which are of surprisingly low phytotoxicity.

3,636,223

THERAPEUTIC TREATMENT OF PARKINSON'S DISEASE

Pier Nicola Giraldi, Milan, and Vittorio Mariotti, Pesaro, Italy, assignors to Carlo Erba S.p.A., Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 769,441, Oct. 21, 1968. This application Mar. 13, 1969, Ser. No. 840,070
Claims priority, application Italy, Sept. 23, 1966, 21,973/66; Dec. 31, 1966, 31,818/66
(Filed under Rule 47(a) and 35 U.S.C. 116)
The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 4 Claims

1-oxo-2-methyl - 3-(aminophenyl-p-ethoxypiperidino)-isoindoline and the process of making the same, is disclosed. This compound has anti-parkinson activity and is therapeutically useful.

3,636,224

METHODS OF INDUCING HYPNOSIS

Sidney Robert Safir, River Edge, N.J., and Eugene Newton Greenblatt, Spring Valley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,593
Int. Cl. A61k 27/00
U.S. Cl. 424—270 4 Claims

Compositions containing 5 - acetylimino - N-ethyl - 4-methyl - Δ^2 - 1,3,4 - thiadiazoline - 2 - sulfonamide and their method of use is described. The compositions are useful for their ability to produce hypnosis when given orally to warm-blooded animals.

3,636,225

METHOD OF IMPROVING MICROCIRCULATION

Eric T. Fossel, Cambridge, Mass., assignor to Unimed, Inc., Morriston, N.J.

No Drawing. Filed May 1, 1969, Ser. No. 821,111
Int. Cl. A61k 27/00
U.S. Cl. 424—273 8 Claims

This invention relates to the improving microcirculation and the treatment of conditions which result in impaired microcirculation, according to which invention 4(5)-[2-amino-3-bromo (or chloro) propyl]imidazole or 3-(4-(5)-imidazole) propylene imine (1,2) is administered in order to achieve these results.

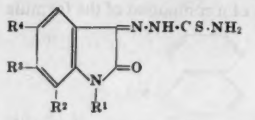
3,636,226

TREATMENT OF ADENOVIRUS INFECTIONS

Denis J. Bauer, London, England, assignor to Burroughs Wellcome Co.

No Drawing. Filed Sept. 11, 1967, Ser. No. 666,976
Int. Cl. A61k 27/00
U.S. Cl. 424—274 4 Claims

A method of both treating and preventing adenovirus infections in mammals, which comprises administering to a mammal a therapeutically effective amount of a compound (I)



(I)

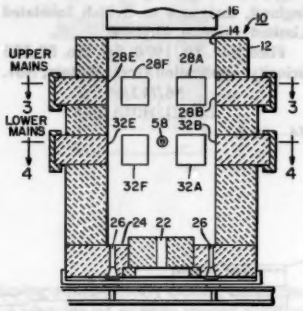
wherein R^1 is selected from the class consisting of hydrogen, acetyl, alkyl, alkenyl and alkynyl, having not more than 5 carbon atoms, which may carry substituents elected from the class consisting of halogen and hydroxy which may be esterified with a lower aliphatic carboxylic acid radical having a total of not more than 5 carbon atoms; R^2 is selected from the class consisting of hydrogen, halogen and lower alkyl; and R^1 and R^2 form a trimethylene chain, and R^3 and R^4 are selected from the class consisting of hydrogen and halogen, at least two of R^2, R^3 and R^4 being hydrogen.

ELECTRICAL

3,636,227
CONTROL SYSTEMS

Gerald J. McQuaid, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,997
Int. Cl. F27d *11/04*; H05b *3/00*
U.S. Cl. 13—6 **10 Claims**

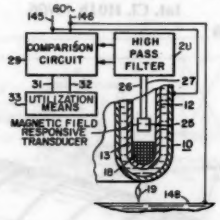


Systems for controlling an electric melting furnace containing a bath of molten material acting as a resistance to electric currents passing therethrough; with the systems including first and second control loops for controlling both the level and distribution of energy supplied to first and second position of the bath; a third control loop for controlling the temperature of the bath; and if desired, a further control loop for controlling the energy ratio between the first and second control loops.

3,636,228
APPARATUS FOR MONITORING ARC ROTATION ON AN ELECTRODE

George Comenetz, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 564,341, July 11, 1966, now abandoned. This application Sept. 4, 1970, Ser. No. 69,669
Int. Cl. H05f *7/18*; F27d *11/10*
U.S. Cl. 13—12 **24 Claims**

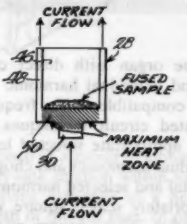


A transducer, which may be responsive to vibration, sound, light, stress, or a magnetic field, is mounted on or in the electrode, and produces a signal which increases in intensity when the arc, or current filaments in the electrode supplying the arc, pass near the transducer. Where alternating current supplies the arc, comparison circuit means compares the transducer output signal in time with the 60 cycle or other frequency alternating current supplying the arc, and if a transducer signal is not produced once per alternation, or once per cycle, the comparison circuit supplies an output signal to utilization means which may shut off the arc current, give an alarm, increase the strength of the magnetic field exerting a force on the arc to cause it to rotate, or be used for other purposes. Where direct current produces the arc, the comparison circuit means produces a time duration reference signal. In some embodiments, the transducers are sealed in a moisture proof manner and mounted within a fluid passageway within the electrode; fluid passageways are provided to conduct heat flux from the arcing surface or electrode tip. In another embodiment, three transducers circumferentially spaced 120° from each other provide three signals to a comparison circuit; as long as the three signals, or if desired, two of the three signals occur with reasonable symmetry with respect to time, the arc is deemed to be rotating normally; when the symmetry is no longer present, the comparison circuit supplies an output to utilization means.

3,636,229
ELECTRICALLY RESISTIVE CRUCIBLE

George J. Sitek, Stevensville, and Robert N. Revesz, Berrien, both of Mich., assignors to Laboratory Equipment Corporation, St. Joseph, Mich.

Filed Oct. 26, 1970, Ser. No. 83,786
Int. Cl. F27d *11/02*; H05b *3/10*
U.S. Cl. 13—25 **2 Claims**

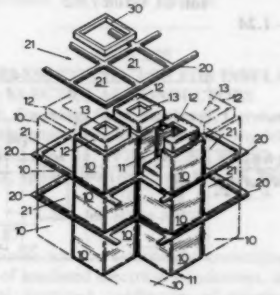


An electrically resistive carbon crucible for an impulse or resistance furnace designed to have improved heating characteristics.

3,636,230
DIDACTIC APPARATUS

Charles Arthur Tacey, London, England, assignor to Philograph Publications Limited, London, England

Filed July 8, 1970, Ser. No. 53,100
Claims priority, application Great Britain, July 10, 1969, 34,815/69
Int. Cl. G09b *19/02*; A63h *33/12*
U.S. Cl. 35—34 **4 Claims**



This invention is concerned with didactic structural apparatus and comprises a plurality of uniformly shaped and

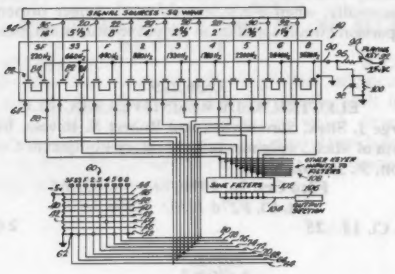
dimensioned cuboidal units and connecting means therefore whereby said units can be assembled to provide stable examples of areas and three-dimensional solids which can be used in the teaching of arithmetic and geometry.

3,636,231

DC KEYED SYNTHESIS ORGAN EMPLOYING AN INTEGRATED CIRCUIT

Ray B. Schrecongost, Park Ridge, Ill., and David Millet, Cambridge, Mass., assignors to Hammond Corporation, Deerfield, Ill.

Filed Apr. 19, 1971, Ser. No. 135,050
Int. Cl. G10h 1/06
U.S. Cl. 84—1.23 **11 Claims**



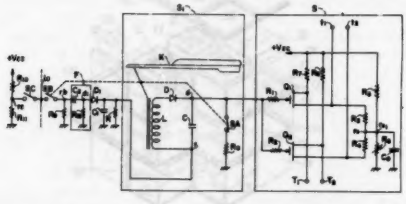
A synthesis-type organ with direct current keying, envelope shaping and individual harmonic scaling particularly adapted to be compatible with frequency divider and MOSFET integrated circuit techniques. A DC voltage is scaled to several appropriate selected levels for the fundamental and individual harmonics and chopped by tone signals for the fundamental and selected harmonics to provide a collection of appropriately scaled square wave signals at the chopping frequencies. These square waves are individually keyed with appropriate envelope control through band pass sine filters adapted to reject all but the fundamentals of the keyed signals. The filtered outputs are mixed to supply output musical signals of appropriate harmonic quality having a desirable attack and decay envelope.

3,636,232

TOUCH-RESPONSIVE TONE ENVELOPE CONTROL CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

Ryu Hiyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 30, 1970, Ser. No. 51,211
Claims priority, application Japan, July 4, 1969, 44/63581; 44/63582; July 23, 1969, 44/69772; 44/69773
Int. Cl. G10h 1/02
U.S. Cl. 84—1.24 **7 Claims**



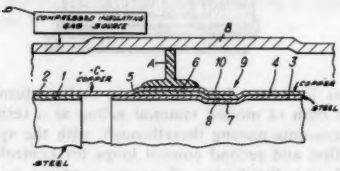
In a keying system for an electronic musical instrument in which an individual keyer is controlled in response to the intensity of depression of a corresponding playing key so that a keyed tone signal has an amplitude in accordance with the key depression intensity, an impulse supply means associated with the operation of the key is provided to additively control the keyer individually. The impulse signal applied to the keyer determines the buildup envelope (amplitude) characteristic of the keyed tone signal. The system is simple in construction and easy to manufacture and provides a variety of excellent tonal effects.

3,636,233

GAS INSULATED BUS BAR INSTALLATION

Christy Edward Selvanayagam Swampillai, Tadworth; Eric John Savage, Perivale, and John Edward Lawton, London, all of England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Nov. 10, 1970, Ser. No. 88,300
Claims priority, application Great Britain, Nov. 19, 1969, 56,712/69
Int. Cl. H01b 9/06
U.S. Cl. 174—16 B **11 Claims**



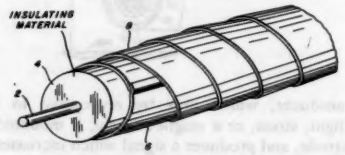
In a gas insulated phase bus bar system for service at or above 22 kv. and 1,000 A., the load-carrying conductor comprises an outer tube of high-conductivity metal and a plurality of inner reinforcing tubes longitudinally spaced apart by distances small in comparison with their lengths. Straight joints, expansion joints and terminations are also disclosed.

3,636,234

COMMUNICATION CABLE

Frederick W. Wakefield, Northboro, Mass., assignor to United States Steel Corporation

Filed Dec. 4, 1969, Ser. No. 882,251
Int. Cl. H01b 11/06
U.S. Cl. 174—36 **2 Claims**



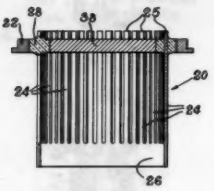
Communication cable with improved audio and radio frequency transmission and shielding characteristics uses a tinned annealed steel foil tape for shielding.

3,636,235

HEADER HAVING HIGH-DENSITY CONDUCTOR ARRANGEMENT AND METHOD OF MAKING SAME

Neal T. Williams, Bloomfield, N.J., assignor to Sealtronics, Inc., Clifton, N.J.

Filed June 11, 1970, Ser. No. 45,335
Int. Cl. H01j 5/40; H05k 5/06
U.S. Cl. 174—50.56 10 Claims



A header having a high-density density conductor arrangement having a plurality of equally spaced-apart conductors held in place by a sealing, electrical insulating material.

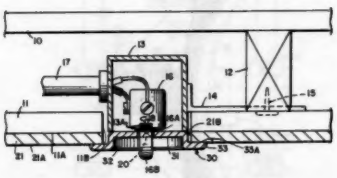
A method of forming such a header with a high-density conductor arrangement by chemically milling or stamping the conductors from a single sheet of material, leaving them joined by strips at both ends. The conductors are formed in the shape desired and fused to a base, after which the upper strip is ground off and the conductors are plated. The conductors are now ready for use in the final manufacture of electronic assemblies such as transistors, integrated circuits, etc.

3,636,236

REPLACEMENT COVER PLATE FOR ELECTRIC OUTLET BOX

Earl E. Smith, Charlevoix, Mich., assignor to Lexalite Corporation, Charlevoix, Mich.

Filed May 1, 1970, Ser. No. 33,769
Int. Cl. H02g 3/14
U.S. Cl. 174—66 2 Claims



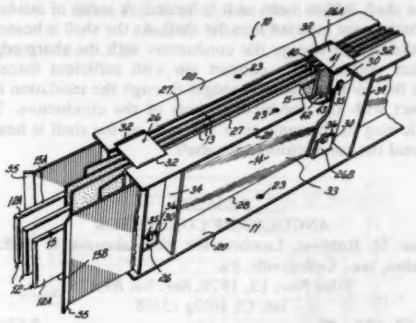
A replacement cover plate for an electric outlet box installed in a building structure with an open outer end thereof adjacent an original wall surface which is subsequently covered with a new wall covering means of substantial thickness forming a new outer wall surface spaced outwardly of the original. The cover plate of the invention comprises a central segment adapted to close and normally seal against the open end of the box without requiring relocation thereof, a peripheral wall means around the central segment extending outwardly thereof an amount substantially equal to the thickness of said wall covering means, and a peripheral edge flange around said peripheral wall means and parallel of the central segment having an inner face adapted to abut the new outer wall surface.

3,636,237

BUS DUCT

Paul M. Hafer, Florence, Ky., assignor to Arrow-Hart, Inc., Hartford, Conn.

Continuation-in-part of application Ser. No. 832,405, June 11, 1969, now abandoned. This application Sept. 8, 1970, Ser. No. 70,010
Int. Cl. H01b 7/08; H02g 15/08
U.S. Cl. 174—68 B 24 Claims



A bus duct comprised of a group of elongated, flat bus bars positioned in side-by-side relation within an elongated housing, the housing having sidewalls of a height substantially greater than the width of the bus bars. In preferred form, the bus duct of this invention includes bus bars separated one from the other and from the sides of the housing only by insulator sheets positioned therebetween to form a sidewall-insulator sheet-bus bar "sandwich." Further, the sidewall-insulator sheet-bus bar "sandwich" is maintained in functional assembly by (a) at least two clips spanning the sidewalls at separate positions longitudinally spaced one from the other along the top edges of the sidewalls, the spanning portion of each of the clips being substantially spaced above the bus bar group, and (b) at least two clips spanning the sidewalls at separate positions longitudinally spaced from one another along the bottom edges of the sidewalls, the spanning portion of each of the clips being substantially spaced below the bus bar group. Thus, the clips serve to restrain mechanically the bus bar group, insulator sheets, and the housing's sidewalls in compact, assembled, side-by-side relation.

3,636,238

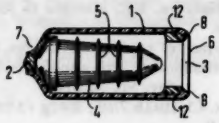
SOLDERLESS CONNECTOR FOR INSULATED ELECTRICAL CONDUCTORS

Erwin Biebach, Soecking, (near Starberg), Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 25, 1970, Ser. No. 49,748
Claims priority, application Germany, July 15, 1969, P 19 35 976.3
Int. Cl. H02g 15/08
U.S. Cl. 174—87 7 Claims

Solderless connector for electrically connecting the conducting cores of insulated electrical conductors, and particularly the plastic-insulated conductors of telephone cables. The connector includes a conical contact pin having a series of sharp edge contact points in the form of annular ridges spaced along and projecting from the periphery of the pin. A

cylindrical shell having a closed end and an open end, extends about the contact pin. The contact pin abuts the closed end of the shell and tapers toward the open end of the shell. The shell is made from a polymerized plastic material which shrinks under the influence of heat and sets to its shrunk condition as it cools. The open end of the shell has an inturned lip containing a plastic ring to the interior open end portion



of the shell, which melts as it is heated. A series of insulated conductors are inserted into the shell. As the shell is heated it will shrink and engage the conductors with the sharp-edged contact points of the contact pin with sufficient force to force the contact points or ridges through the insulation into contact with the conducting cores of the conductors. The plastic ring at the same time will melt as the shell is heated and seal the conductors to the shell.

3,636,239

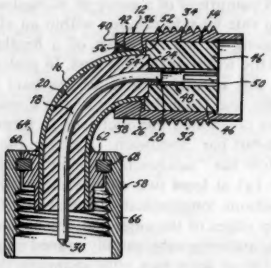
ANGULAR RF CONNECTOR

Arthur M. Robbins, Lambertville, N.J., assignor to Uniform Tubes, Inc., Collegeville, Pa.

Filed Nov. 13, 1970, Ser. No. 89,275

Int. Cl. H02g *15/08*

U.S. Cl. 174—87 **8 Claims**



An angular RF connector comprised of an arcuate coaxial cable section and an adapter consisting of an outer conductor, inner tubular contact and a dielectric therebetween, one end of the outer conductor having a socket opening therethrough conforming to the surface generated by rotating the arcuate coaxial cable section around the axis of the adapter, the socket matingly receiving one end of the coaxial cable section and being conductively secured thereto.

3,636,240

CABLE SPLICE PROTECTOR

Hermann Quante; Peter Neumann, both of Wuppertal, and Walter Rose, Dahl, all of Germany, assignors to Firma Wilhelm Quante, Wuppertal-Elberfeld and Firma Walter Rose KG, Hagen, Germany

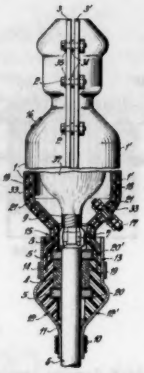
Filed Nov. 10, 1970, Ser. No. 88,330

Claims priority, application Germany, Apr. 23, 1970, P 20 19 543.1

Int. Cl. H02g *15/08*

U.S. Cl. 174—92 **23 Claims**

A sleeve for protecting a cable splice is composed of at least two elongated shell sections having abutting sealing faces and being composed of synthetic plastic material. Longitudinal grooves are provided in the sealing faces and permanently plastomeric sealing material is accommodated in



these grooves. Moisture barrier means is embedded in the shell sections in form of a foil, preferably a compound foil of metal to which thermoplastic material is adhered.

3,636,241

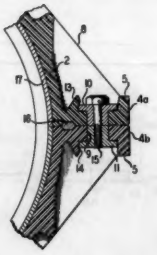
TELEPHONE CABLE SPLICE CASE

Robert Garland Baumgartner, Baltimore, and Kenneth Chambers Maclean, Phoenix, both of Md., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1970, Ser. No. 91,843

Int. Cl. H02g *15/08*

U.S. Cl. 174—92 **10 Claims**



This disclosure describes a splice closure for telephone cable pairs. The closure consists of a pair of plastic covers with metal lining or coating, and end plates of differing designs to accommodate from one to six cables. Internally, the closure includes a metallic harness at each end with outer and inner metal clamps placed around the cable and linked

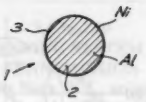
together with insulated metal tie bars. The closure is hermetically sealed at the faceplate-cover interface by a butyl rubber sealing compound. An air escape is included in the end plate to avoid air entrapment at the interface.

3,636,242

AN ELECTRIC CONDUCTOR WIRE

Hans Olof Hansson, Sollentuna, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 24, 1969, Ser. No. 879,567
Claims priority, application Sweden, Dec. 9, 1968, 16795/68; May 27, 1969, 7440/69
Int. Cl. H01b *5/08*
U.S. Cl. 174—128 **7 Claims**



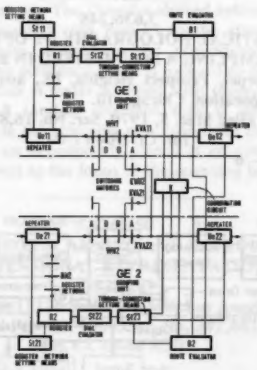
An electric conductor wire of aluminum or aluminum alloy with a diameter less than 5 mm., is covered with a layer containing nickel with a thickness in the range of from 0.1 to 10 μ. In order to improve the adhesiveness of the layer, the layer consists of an alloy of nickel and zinc with a proportion of zinc up to 75 percent.

3,636,243

LONG-DISTANCE COMMUNICATION DIAL EXCHANGE INSTALLATION WITH CENTRAL CONTROL

Alfred Bachner, Olching; Karl Schneider, Krailling; Martin Ertel, Munich, and Erika Schraml, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 9, 1969, Ser. No. 831,309
Claims priority, application Germany, June 11, 1968, P 17 62 405.4
Int. Cl. H04l *11/00*
U.S. Cl. 178—3 **10 Claims**



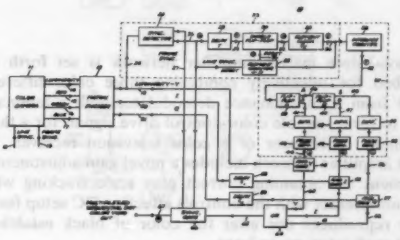
A long-distance communication teletype dial exchange installation wherein the establishment of the connection is centrally controlled. A plurality of line grouping units or exchange installations (GE), each having a through-connection network (WN), connection establishment systems, and a control unit, the lines of the plurality of grouping units being connected thereto in even distribution, are provided. Each control unit, operating independent from the control units of other exchanges, is operative to connect through the lines assigned to it over multiple lines (VL) between the through-connection networks and all receiving lines of every other exchange. At least one coordinating circuit (K) prevents the multiple seizure of outgoing lines and determines the succession sequence during testing for the seizure state of receiver lines by several simultaneously requesting control units.

3,636,244

SEQUENTIAL DOT INTERLACED COLOR TELEVISION SYSTEM

Edward S. Smierciak, and Thomas R. Butler, both of Fort Wayne, Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 3, 1969, Ser. No. 796,947
Int. Cl. H04n *9/36*
U.S. Cl. 178—5.2 R **22 Claims**



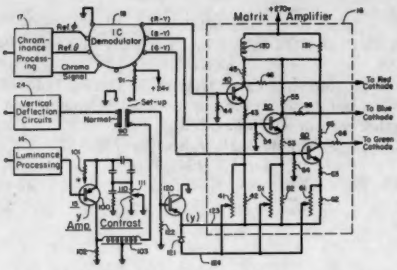
A sequential dot interlaced color television system having a color television camera with a plurality of output circuits respectively providing luminance and chrominance signals. A plurality of trains of recurrent sampling signals are generated equal in number to the number of camera output circuits, and a plurality of sampling gates are provided which couple each of the camera output circuits to a transmission facility in response to a different one of the trains of sampling signals so as to pass a train of sampled video signals from the respective output circuit to the transmission facility, the trains of sampling signals being respectively phase-displaced so that the sampled video signals are multiplexed in the transmission facility. A color television display tube is provided having a plurality of video signal input circuits equal in number to the camera output circuits for respectively receiving luminance and chrominance signals. Another plurality of trains of recurrent sampling signals are generated equal in number to the sampling signal trains generated at the transmitting station and respectively having the same frequencies and phase displacement, and another plurality of sampling gates are provided for coupling each of the display tube video signal input circuits to the transmission facility in response to a different one of the second trains of sampling signals thereby passing to the video signal input circuits trains of sampled video signals respectively corresponding to those passed by the sampling gates at the transmitting station. Thus, the color information-conveying signals provided by the camera tube are converted into sequential dot format and then multiplexed for application to the transmission facility. At the receiver, the multiplexed chain of information-conveying pulses is demultiplexed and routed to the respective guns of the display tube.

3,636,245

MATRIX AMPLIFIER WITH GAIN ADJUSTING MEANS INEFFECTIVE TO ALTER THE COLOR OF BLACK

John L. Rennick, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 13, 1970, Ser. No. 63,572
Int. Cl. H04n 9/50
U.S. Cl. 178—5.4 MA 10 Claims



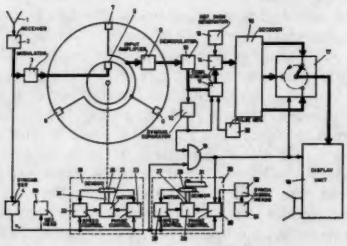
A solid-state matrix amplifier network is set forth and described for selectively combining three color-difference signals from a chrominance demodulator with a luminance signal to form suitable color-control drive signals for a three-gun image reproducer of a color television receiver. The matrix amplifier network includes a novel gain adjustment arrangement for obtaining correct grey scale tracking which does not interact with the controls effecting DC setup for the image reproducer nor alter the color of black established during such setup procedures.

3,636,246

TELEVISION SIGNAL CONVERSION APPARATUS

Werner Steiger, Birmensdorf/Zurich, Switzerland, assignor to Eidopher, A.G., Glarus, Switzerland

Filed Nov. 21, 1969, Ser. No. 878,802
Claims priority, application Switzerland, Nov. 26, 1968, 17681/68
Int. Cl. H04m 5/78
U.S. Cl. 178—5.4 CR 9 Claims



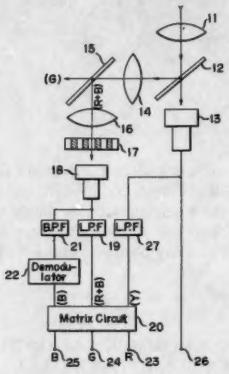
A television signal conversion apparatus for converting one type of television signals into another. More specifically an apparatus for sequentially reproducing simultaneous composite color television signals by using a simultaneous-to-sequential signal converter in the form of a magnetic tape recording and reproducing machine. The magnetic tape is guided in a helical path around two coaxially mounted cylinders. The rotatable magnetic heads for recording the incoming television signals on the tape and for reproducing the recorded signals are mounted on a common rotor, which is coaxially disposed inside the cylinders.

3,636,247

COLOR TELEVISION IMAGE PICKUP SYSTEM

Yasuo Takemura, Kawasaki-shi, and Kazuo Hamaguchi, Yokohama-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 2, 1967, Ser. No. 680,202
Claims priority, application Japan, Nov. 10, 1966, 41/73470; Mar. 8, 1967, 42/14161; Jan. 18, 1967, 42/3142; Feb. 8, 1967, 42/7702
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 1 Claim



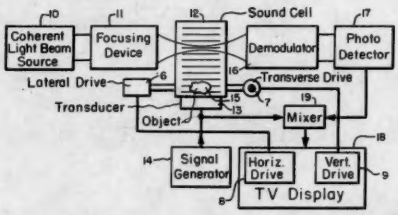
A light from the picked-up object is divided into two portions by a first optical system. A luminance signal is produced from one of the divided portions and a chromaticity signal is obtained from the other divided portion by a second optical system. This second optical system picks up first and second color lights and is arranged such that the first color light is left intact and the second color light is intercepted in the form of stripes. The chromaticity and luminance signals are then combined to produce a three-color signal.

3,636,248

ACOUSTICAL HOLOGRAPHY BY OPTICALLY SAMPLING A SOUND FIELD IN BULK

Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 5, 1970, Ser. No. 16,873
Int. Cl. H04n 1/04
U.S. Cl. 178—6 12 Claims



A coherent monochromatic light beam is directed into a light-sound interaction cell in which a spatially modulated

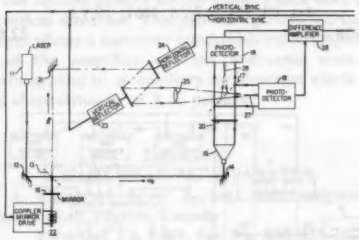
sound field of constant frequency-carrying image information is propagated nominally transversely to the beam by means of a transducer attached to the sound cell and driven by an appropriate constant frequency signal. The beam is focused about any desired point in the sound field so that a scattering interaction is obtained. The focal region is maintained narrower than the sound wavelength so that a temporal and spatial modulation is imparted to the light representative of the phase and amplitude of the sound field at the focal region. Interposed in the path of such modulated light is a photodetector preceded by a demodulator comprised of either a spatial filter or quarter-waveplate and analyzer. The photodetector extracts an output signal at the sound frequency whose phase and amplitude is representative of that of the sound field about the desired focal region. Such a signal may be recorded or displayed either conventionally, or holographically, if the output signal is mixed with a reference signal derived from the constant frequency transducer signal.

3,636,249

HETERODYNE SCANNING SYSTEM FOR HOLOGRAM TRANSMISSION

Arthur B. Larsen, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 28, 1969, Ser. No. 845,230
Int. Cl. H04n *9/56*
U.S. Cl. 178—6.5 **7 Claims**



A hologram heterodyne scanner wherein a stationary coherent light beam illuminates the subject and is then optically relayed via a beamsplitter to a photodetector. The other phase-locked optical frequency, needed for the reference beam, is derived from the first-mentioned beam by means of a Doppler technique. The Doppler-shifted reference beam is orthogonally disposed with respect to the stationary beam and it is likewise relayed to the photodetector via the beamsplitter. The reference beam is focused to define a small spot and the latter is raster scanned with respect to the stationary beam. A random interlace scan is utilized, which helps to eliminate the scanning structure from the hologram. The photodetector is purposely placed at an out-of-focus location with respect to the locus of the scanning beam waist.

3,636,250

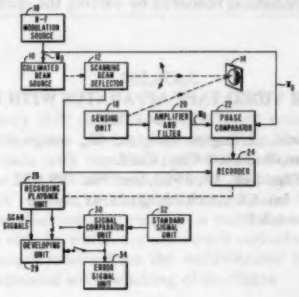
APPARATUS FOR SCANNING AND REPRODUCING A THREE-DIMENSIONAL REPRESENTATION OF AN OBJECT

Andrew V. Haeff, 11134 Bellagio Road, Los Angeles, Calif.

Filed Feb. 26, 1964, Ser. No. 347,603
Int. Cl. H04n *9/56*
U.S. Cl. 178—6.5 **22 Claims**

The surface of the object to be reproduced is scanned in successive lines with a narrow beam of columated radiation, preferably light, the intensity of which is modulated at a fixed frequency. The radiation reflected from the object is received by a detector which generates a signal which is compared in phase with the modulating signal to generate a signal indicative of the relative distance between successive points as they are scanned on the object surface. This latter signal is then used to form successive solid cross sections of variable thickness in a developing medium to reproduce the relative distances measured to the object along each of the scan lines, so that the solid cross sections located adjacent one another in the order of the scanning pattern reproduce the surface of the object.

In particular, the surface of the object is scanned by a laser beam which is amplitude modulated at a selected radiofrequency. The beam passes through an absorption cell containing a pressurized gas corresponding to that in the laser so that application of sufficient direct current excitation raises a nominal number of electrons to an energy state capable of absorbing photons of the laser energy. The beam passes through a portion of the cell surrounded by a cavity resonator tuned to one-half the desired modulation frequency which produces an oscillatory electric field that periodically varies the number of absorption electrons at the desired



modulation frequency, thus modulating the intensity of the beam emerging from the cell.

A full color replica of the object is provided by coloring the different cross-sectional profiles of the object as they are formed. By correctly phasing the color information with respect to the operation of cutting the successive cross section profiles in a tape medium, three paint atomizers, each containing a primary color, are used to direct the paint colors in the selected proportions to the edges of the tape medium. The atomizers consist of half wavelength mechanical resonators with piezoelectric driving crystals that transmit ultrasonic vibrations to quarter wave sections extending on either side of a central holding point. The amplitude of the electrical signal driving the crystal of each atomizer at a fixed ultrasonic frequency is modulated in accordance with the color information. Paint or other coloring fluid is drawn through small capillary holes extending from the center of the atomizer to its upper surface where it is broken up into small droplets and directed upward towards the tape in quantities corresponding to the driving signal amplitude.

3,636,251

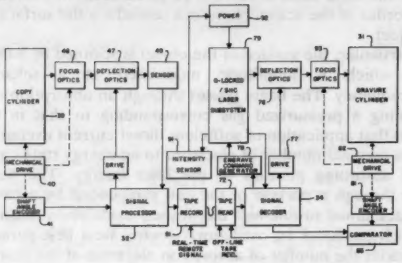
LASER FACSIMILE SYSTEM FOR ENGRAVING PRINTING PLATES

Richard T. Daly, Huntington, and Robert A. Kaplan, South Huntington, both of N.Y., assignors to Quantronix Corporation, Farmingdale, N.Y.

Filed Aug. 28, 1968, Ser. No. 755,951
Int. Cl. H01s *3/09*; **H04n** *1/08*, *1/26*
U.S. Cl. 178—6.6 B **7 Claims**

A system for engraving intaglio printing plates in which tiny uniformly sized cells are formed in the printing plate by

the engraving tool, preferably a pulsed output laser, and in



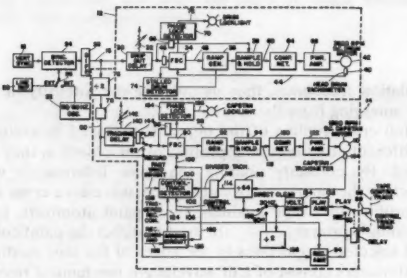
which variable tone is rendered by varying the spatial density of the cells.

3,636,252

SERVO FOR VIDEO TAPE APPARATUS WITH EDITING CAPABILITIES

Leonard Kowal, Arlington Heights, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 17, 1969, Ser. No. 799,872
Int. Cl. G11b *15/52, 23/42, 27/02*
U.S. Cl. 178—6.6 P **16 Claims**



A system for a video tape recorder produces reliable video tape assemble edits with no significant time base error by employing digital techniques in the phase control of the head drum and capstan servos.

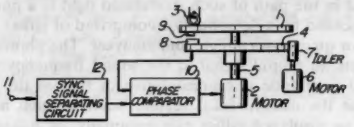
3,636,253

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Masaaki Notani, Osaka; Makoto Ashibe, Neyagawa-shi; Yasuo Nishitani, Moriguchi-shi, and Keiziro Mihara, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1969, Ser. No. 868,850
Claims priority, application Japan, Oct. 29, 1968, 43/80176; Oct. 30, 1968, 43/79728; Nov. 20, 1968, 43/102218
Int. Cl. H04n *5/12, 5/21, 5/78*
U.S. Cl. 178—6.6 DD **5 Claims**

In a magnetic recording and reproducing apparatus wherein at least one of a magnetic recording medium and a magnetic head is rotated about a certain point to record about one field of a television signal for an interlaced scanning system on the recording medium in the form of an annular track, means is provided for controlling the relative rotational speed in such a manner that the total circumference of the annular track on the recording medium



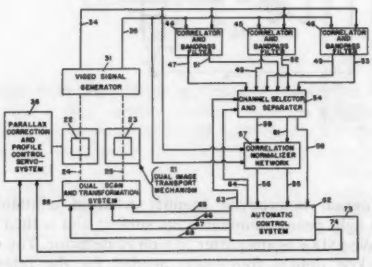
formed by the magnetic head will be the length of the track of one horizontal synchronizing signal period of the television signal to be recorded multiplied by an integer, so that the horizontal synchronizing signal may not be disturbed during reproduction even when one and the same track is repeatedly reproduced.

3,636,254

DUAL-IMAGE REGISTRATION SYSTEM

Howard Ronald Johnston, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Nov. 12, 1969, Ser. No. 875,888
Int. Cl. H04n *7/18;* **H01j** *39/12*
U.S. Cl. 178—6.8 **22 Claims**


CORRELATOR AND BANDPASS FILTER
CORRELATOR AND BANDPASS FILTER
CORRELATOR AND BANDPASS FILTER
VIDEO SIGNAL GENERATOR
CHANNEL SELECTOR AND SEPARATOR
PARALLAX CORRECTION AND PROFILE CONTROL SERVO-SYSTEM
CORRELATION NORMALIZER NETWORK
DUAL IMAGE TRANSPORT MECHANISM
DUAL SCAN AND TRANSFORMATION SYSTEM
AUTOMATIC CONTROL SYSTEM

Many dual-image registration systems employ a cross-correlation signal to control various system parameters. The amplitude of the signal is proportional to the level of correlatable image detail being simultaneously scanned in the two images. Described here is a technique for normalizing the cross-correlation signal by subtracting therefrom a normalizing signal with an amplitude responsive to the total level of detectable image detail being scanned. The resultant normalized signal has an amplitude that accurately represents the degree of image detail registration existing in the scanned images.

3,636,255

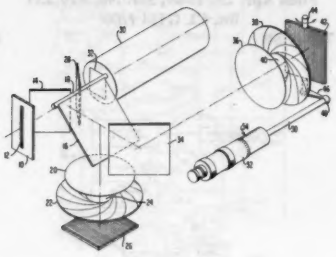
OPTICAL SPECTRUM ANALYZER

Oscar L. Gaddy, Champaign; Nick Holonyak, Jr., Urbana, both of Ill.; Murray D. Sirkis, Boulder, Colo., and Jack R. Baird, Urbana, Ill., assignors to KDI Corporation, Fairfax, Ohio

Filed Aug. 9, 1968, Ser. No. 751,524
Int. Cl. H04n *1/38, 7/18*
U.S. Cl. 178—6.8 **2 Claims**

A real time display of the optical spectrum of an incident beam of electromagnetic radiation is obtained by dispersing

the beam into its component frequencies and focusing the dispersed component frequencies onto the face of a video pickup camera. Two different focal lengths are used for the dispersion means to provide either a complete optical spectrum or a partial optical spectrum on the face of the camera. The camera is scanned horizontally with each horizontal scan



being displaced vertically to form a raster pattern scan even though the optical pattern on the camera face does not vary in the vertical direction. This provides greatly increased sensitivity and allows a narrower bandwidth video amplifier. The output of the amplifier and the horizontal scan control signals are applied to an auxiliary oscilloscope which displays the optical spectrum in an X–Y pattern.

3,636,256

CHART-READING APPARATUS

Eugene A. Cameron, Silver Spring, Md., assignor to Instronics Limited, Ottawa, Canada

Filed Oct. 23, 1969, Ser. No. 868,835
Int. Cl. G08b *21/00*
U.S. Cl. 178—18 **10 Claims**

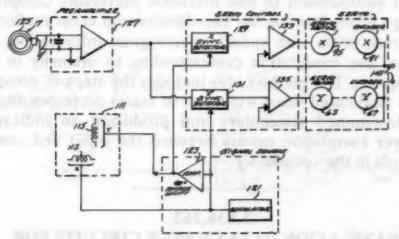


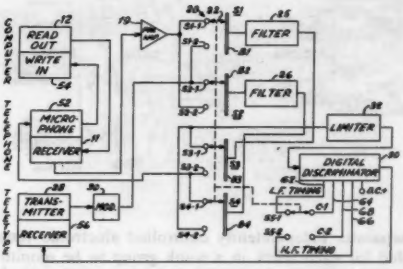
Chart-reading apparatus for providing the "X" and "Y" coordinates of selected points on a line as the line is traced by a manually movable index. A source of radiation located below a table top is moved by servo means to follow movement of the index, which index carries radiation-sensing means. The servo means operate "X" and "Y" encoders, and the operator by actuation of a "readout" switch selects those points for which the "X" and "Y" coordinates are to be provided as outputs.

3,636,257

DIGITAL PULSE IDENTIFICATION SYSTEM

Brook Dixon, Selden, N.Y., assignor to Acrodyne, Inc., Clifton, N.J.

Filed June 19, 1969, Ser. No. 834,719
Int. Cl. H04l *27/00*
U.S. Cl. 178—66 **5 Claims**



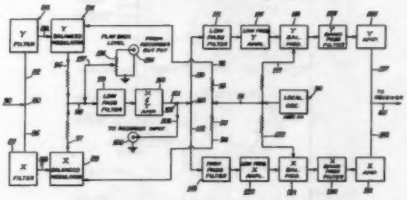
A frequency shift digital communications system has two band-pass filters for passing mark-space signals in two different channels with means for selectively switching either filter to pass one of the channels from a teletype transmitter or computer readout to a digital discriminator or computer write-in. The discriminator employs a multivibrator provided with timing circuits which are selectively activated to change the pulse length issuing from the multivibrator by switching means coordinated with switching of the filters.

3,636,258

COMMUNICATION SYSTEM HAVING SIGNAL STORAGE

Joseph F. Brumbach, Niles, Ill., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Feb. 20, 1969, Ser. No. 800,964
Int. Cl. G03c *21/00;* **H03d** *7/16;* **H04n** *1/28*
U.S. Cl. 178—6.6 A **2 Claims**

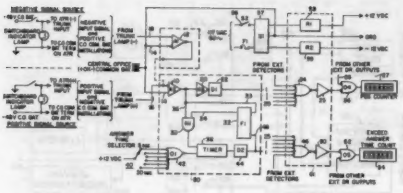


A communication system in which frequency-modulated intelligence signals are stored on magnetic tape for subsequent retransmission to one or more receivers. Errors in the recorded signals, introduced by inherent defects of the recording mechanism, are effectively compensated by recording subnormal frequency signals derived from the intelligence signals. During playback the recorded signals are reconverted to original frequencies for transmission to the receiver.

3,636,259
ANSWERING TIME RECORDER FOR TELEPHONE APPARATUS

Ernest C. Karras, 1643 N. Natoma, Chicago, Ill.

Continuation of application Ser. No. 810,600, Mar. 26, 1969. This application Feb. 26, 1970, Ser. No. 14,563
Int. Cl. H04m 3/36
U.S. Cl. 179—8 A 18 Claims

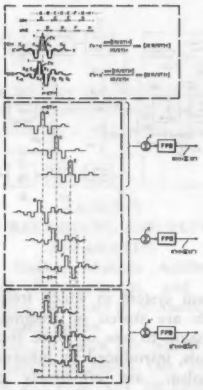


A separate, independently controlled electronic timer is provided for each trunk in a trunk group to be monitored. Each timer develops an output pulse if an incoming call in the associated trunk is not answered within a predetermined answering interval. The output pulses of all of the timers are combined and supplied to a solenoid-operated counter which stores and indicates the total number of calls which are not answered within the predetermined interval. The pulses supplied to the counter may also be supplied to a set of print wheels under the control of a printout interval timer so that a permanent record in numerical form is made of the number of calls which exceed the predetermined answering interval during each printout interval. Lockout facilities are also provided for preventing the transmission of output pulses to the print wheels during the actual printing operation. Also, facilities are provided for terminating the printout interval only at a time when no output pulses are being transmitted to the print wheels.

3,636,260
DATA TRANSMISSION SYSTEM

Michel F. Choquet, Vence, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1970, Ser. No. 35,758
Claims priority, application France, May 16, 1969, 6915338
Int. Cl. H04j 1/20
U.S. Cl. 179—15 BC 4 Claims

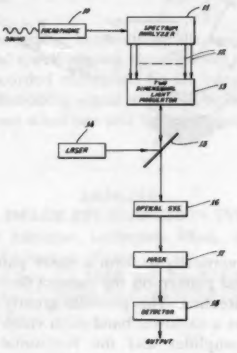


A plurality of phase-modulated signals are multiplexed upon a transmission line by the formation of a suitable summed composite signal. An algebraic analog adder is used to combine over an appropriate signal space the modulation product formed from two alternately selected and modulated signals selected from a serial data stream.

3,636,261
METHOD AND APPARATUS FOR OPTICAL SPEECH CORRELATION

Kendall Preston, Jr., New Haven, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 25, 1969, Ser. No. 819,257
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SB 6 Claims



A system for speech correlation which comprises a coherent light modulating system which accepts a two-dimensional array of information corresponding to a speech spectrogram and superimposes this information two dimensionally on the cross section of a coherent light beam. The correlator further comprises means for imaging the modulated beam on a series of comparison means which correspond to words stored in a library. Preferably, the means provided is capable of simultaneously producing multiple images of the input so as to enable simultaneous comparison. Finally, means are provided for indicating correlation between the input and one of the words in the library. The method embodiment of this invention preferably comprises the steps of modulating the two-dimensional cross section of a coherent beam with speech spectrogram information, the depth of the modulation corresponding to intensity in the spectrogram. The method also includes the steps of comparing the modulated beam with a set of masks corresponding to a predetermined vocabulary and producing an indication whenever correlation occurs between the input and one of the words in the vocabulary.

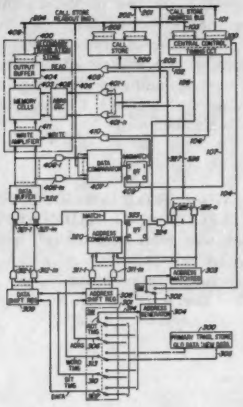
3,636,262
TRANSLATION DATA CHANGE CIRCUITS FOR TELEPHONE SWITCHING SYSTEMS

Glover Douglas Johnson, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 8, 1970, Ser. No. 1,376
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET 12 Claims

A translation data recent change arrangement for a telephone switching system in which the data is normally available to central control from a first store during one part of the control cycle. During another part of the cycle the same or updated data in a second store is compared with the corresponding data in the first store. If the two data groups fail to match, the more recent data from the second store is

written into the corresponding location of the first store. The translation data available to central control is thus maintained current. The second store is provided with two storage



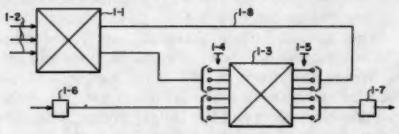
areas; while one is providing data for comparison, the other is available for the introduction of later changes, the second store readout alternating between the two areas.

3,636,263

TELEPHONE SWITCHING SYSTEM

Joseph S. Jezioranski, Stittsville, Ontario; Robert Kenedi, and Real Gagnier, both of Ottawa, Ontario, all of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 17, 1968, Ser. No. 785,072
Claims priority, application Canada, Oct. 31, 1968, 034044
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 E **30 Claims**



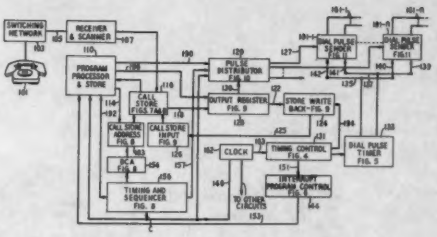
A telephone switching office with a unique arrangement of path interconnections wherein originating junctors and incoming trunks enter one side of a route network, and terminating junctors and terminating trunks leave the other side of the route network. Both types of junctors are connected to a line circuit switching network. This structure allows the concentrating of service circuits which are connected to a service network. The service network interfaces the originating junctors, allowing line access to the service circuits without need to set up a path through the route network.

3,636,264

DIAL PULSE SENDING ARRANGEMENT

Thomas M. Quinn, West Chicago, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 3, 1969, Ser. No. 813,202
Int. Cl. H04m *7/00*
U.S. Cl. 179—18 **2 Claims**



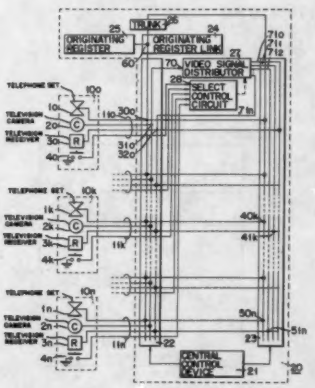
A dial pulse sender is described wherein a common generator supplies dial pulse timing signals to a group of dial pulse transmitters. Control apparatus connected to each transmitter gates a predetermined number of timing signals in accordance with stored calling signal information. The occurrence of gated timing pulses alters a stored calling signal code, and gating of timing pulses is inhibited after a predetermined code is obtained.

3,636,265

TELEVISION CONFERENCE TELEPHONE SYSTEM

Masao Kikuchi, Tokyo; Toshihide Kawashima, Kawasaki-shi; Koichi Kasahara, Yokohama-shi, and Saneyoshi Nagayoshi, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 18, 1969, Ser. No. 808,068
Claims priority, application Japan, Mar. 22, 1968, 43/18201
Int. Cl. H04m *3/56*
U.S. Cl. 179—18 BC **12 Claims**

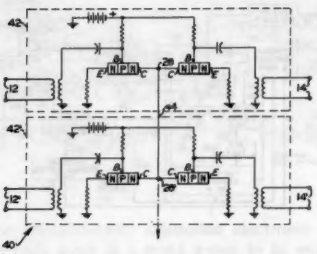


In a conference telephone system utilizing a telephone exchange and terminal equipments, a television image transmitter and receiver are provided for each terminal equipment and the telephone exchange is provided with means to interconnect audio signal lines from subscribers attending a conference, and a video signal distributor to supply the video signal transmitted from a terminal equipment to all subscribers attending a conference.

3,636,266
NEGATIVE IMPEDANCE LINE ISOLATORS

Stephen J. Martin, 1777 S.W. 17th Street, Miami, Fla.

Filed Nov. 7, 1969, Ser. No. 874,833
Int. Cl. H04b 3/18; H04m 3/56
U.S. Cl. 179—1 CN 9 Claims

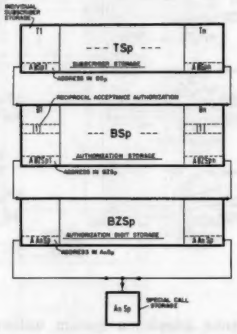


Bidirectional, symmetrical negative impedance transmission line isolators having a high-impedance midpoint junction between a plurality of transistors for providing high-impedance isolation and enabling interconnection of any desired number of such circuits to form a telephone system conferencing network.

3,636,267
ARRANGEMENT FOR THE RECIPROCAL ACCEPTANCE OF CALLS

Robert Fritz; Horst Beckh, and Norbert Torggler, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 9, 1969, Ser. No. 831,308
Claims priority, application Germany, June 10, 1968, P 17 62 398.2
Int. Cl. H04m 3/54
U.S. Cl. 179—18 BD 3 Claims

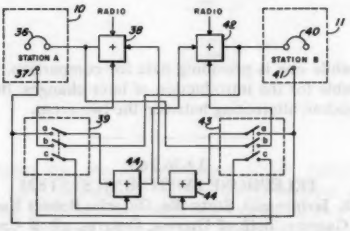


A centrally controlled telephone exchange installation having a plurality of subscriber stations authorized to accept calls for each other wherein a call from a calling repeater for one subscriber station is indicated to the other subscriber stations with an arrangement for the acceptance of a call for a subscriber station by another authorized subscriber station. A centrally arranged storage means is provided and assigned to all subscriber stations authorized for the reciprocal acceptance of calls to mark a call for one of the subscriber stations, and store the address of the calling repeater. An authorization storage, the authorization for the reciprocal acceptance of calls for the subscriber stations being marked therein to determine the address of the centrally arranged storage means corresponding to the assignment of the said one of the subscriber stations to the centrally arranged storage means, is also included.

3,636,268
HIGH-SPEED RAPID RESPONSE INTERCOMMUNICATION SYSTEM

Hallett R. Stiles, and John D. Vinatieri, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,080
Int. Cl. H04m 9/06
U.S. Cl. 179—37 1 Claim



A rapid response intercommunication system is disclosed. A plurality of intercom stations among which audio connections are required are connected to a central switching unit wherein novel digitally controlled switching circuitry is selectively actuated by a calling station to thereby automatically establish two-way audio paths between the calling station and a selectively predetermined number of called stations without any action being required on the part of the called stations. Monitoring means are provided at the calling station whereby the calling station can monitor the called stations to prevent the calling station from interrupting any conversation that may be in progress between the called stations and other stations. Means are also provided at the calling station and at each called station such that any station can cut off the audio connection between it and the calling station. The calling station can also automatically establish a party line among a selectively predetermined number of called stations.

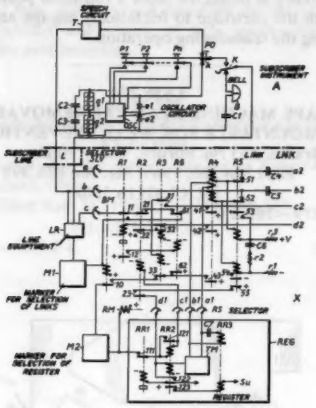
3,636,269
ARRANGEMENT FOR VOICE-FREQUENCY SIGNALLING IN TELEPHONE SYSTEMS

Nils Herbert Edstrom, Vallingby, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 10, 1969, Ser. No. 865,279
Claims priority, application Sweden, Nov. 5, 1968, 15002/68
Int. Cl. H04m 1/50
U.S. Cl. 179—84 VF 2 Claims

In an automatic telephone system a subscriber's instrument has a key set and voice-frequency signal transmitter for the sending of different signals through the subscriber's line to receivers in a telephone exchange. For the initiation of a

voice-frequency signal and starting of the said transmitter and for marking the release of the pressed key a pnpn-diode



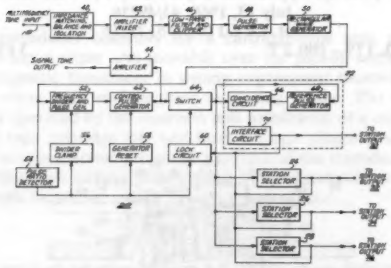
is connected in the line loop each time a voice-frequency signal is sent.

3,636,270

HIGHLY SELECTIVE FREQUENCY DETECTION SYSTEM

Alexander Charles McIntosh, Redmond, and Maurice Irvin Smith, Kirkland, both of Wash., assignors to Tel-Tone Corporation, Kirkland, Wash.

Filed Oct. 20, 1969, Ser. No. 867,788
Int. Cl. H03k *5/20, 9/06;* **H04m** *1/50*
U.S. Cl. 179—84 VF **18 Claims**



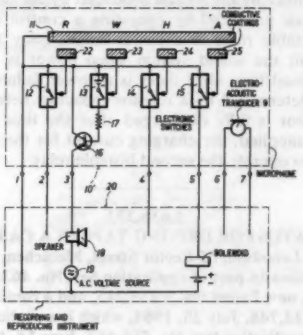
A frequency detection system provides a distinct output for each sinusoidal input signal represented by a selected frequency or combination of frequencies appearing on a common transmission line. Included are a frequency detector and a plurality of station selectors. The frequency detector comprises circuitry converting any input signal into a rectangular wave whose frequency and wave shape are related to that of the input signal. The rectangular wave is applied to a pulse ratio detector whose output normally blocks the rectangular wave from the frequency detector's output. When a legitimate sinusoidal input signal is being received, as distinguished from noise, the rectangular wave has a unity ratio of positive-negative pulse widths and the pulse ratio detector is operative to allow the frequency detector to produce a pulse waveform whose pulse width is directly related to the input frequency. Each station selector initiates a reference pulse in synchronism with one of the output pulses from the frequency detector. The pulse waveform and the reference pulse are coupled to a coincidence circuit. The duration of the reference pulse is chosen to correspond with that of the pulse waveform, if an input signal having a frequency corresponding to that established for the particular station selector is being received. If the termination of the reference pulse and the pulse from the frequency detector coincide within narrow limits, an output signal is provided to a station output device and additionally to a lock circuit in the frequency detector which blocks further operation until the input signal has been removed.

3,636,271

HAND MICROPHONE FOR SOUND RECORDING AND REPRODUCING INSTRUMENTS WITH AC SWITCHING

Jorg Rodenbeck, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Dec. 9, 1969, Ser. No. 883,031
Claims priority, application Germany, Dec. 18, 1968, P 18 15 324.7
Int. Cl. G11b *19/16*
U.S. Cl. 179—100.1DR **4 Claims**



A hand microphone for use with sound recording and reproducing instruments and including a control portion from which various control functions can be initiated in the instrument, one of which control functions involves switching an alternating voltage circuit, the unit for switching such circuit including a transistor having its collector-emitter path connected in series in such alternating voltage circuit and a mechanically stationary electronic switch connected to the base of the transistor for applying thereto, when the electronic switch is closed, a bias voltage which causes the transistor collector-emitter path to conduct current in both directions.

3,636,272

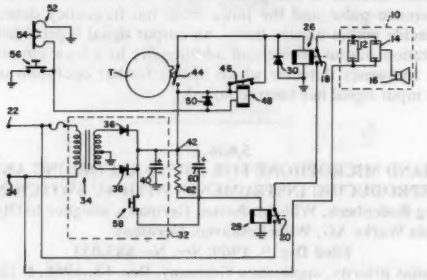
TIMED CONTROL SYSTEM FOR AUDIO REPRODUCTION WITH A BISTABLE RELAY

Gary F. Davis, Jr., and Nolan Keith Maus, Columbus, both of Ind., assignors to Gary Davis Music Makers Store, Inc., Columbus, Ind.

Filed Dec. 17, 1969, Ser. No. 885,875
Int. Cl. G11b *15/06, 15/18*
U.S. Cl. 179—100.1 C **9 Claims**

A time-controlled audio system comprising a sound reproducing and amplifying system and a control system. The

sound system includes a tape recorder and the control system includes a first bistable relay through which the sound system is energized and deenergized and a second bistable relay through which the sound system is energized and deenergized. The first bistable relay is operated periodically by a timer to energize the sound system and, each time the sound system is energized, by signals produced by the tape recorder to deenergize the sound system. The first bistable relay is preferably controlled by a monostable relay which is



operated either by the signals produced by the tape recorder or by signals produced by operating a control switch. The second bistable relay is a power-failure relay arranged to open circuit the sound system when power is reapplied a predetermined time after there is a power failure. The time period is determined by a resistor-capacitor network. When the capacitor is fully discharged after the time period and power is reapplied, the charging current for the capacitor is sufficient to operate the second bistable relay.

3,636,273

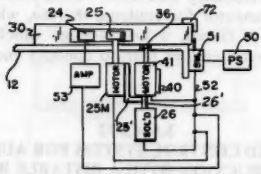
APPARATUS FOR DRIVING TAPE IN A CARTRIDGE

Jerome H. Lemelson, 85 Rector Street, Metuchen, N.J.

Continuation-in-part of application Ser. No. 463,097, June 11, 1965, now Patent No. 3,555,245, and a continuation-in-part of 142,748, July 28, 1961, which is a continuation-in-part of application Ser. No. 515,417, June 14, 1955, now Patent No. 3,003,109. This application July 6, 1970, Ser. No. 52,205

Int. Cl. G11b *5/54, 23/04*

U.S. Cl. 179—100.2 Z **9 Claims**



A tape cartridge and record player unit therefore are provided whereby the cartridge is releasably positioned on the player unit for transducing relative to the tape therein by automatically engaging the hub of a tape storage reel in the cartridge and driving same during the transducing operation to permit movement of the tape past a transducing means. In one form, tape-driving mechanism is normally retracted out of the way of the tape cartridge and projects to engage the hub of the reel mounted in the cartridge so as to effect driving coupling therewith while a cooperating drive mechanism simultaneously is projected from a retracted position against the tape in the cartridge to frictionally engage and drive the tape during the transducing operation.

3,636,274

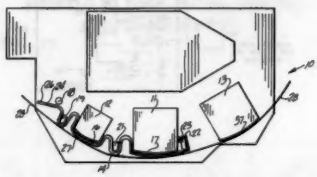
TAPE MACHINE HEAD CAP REMOVABLY MOUNTABLE FOR WEAR PREVENTION

John D. Bratka, 333 No. Spruce, Valley, Nebr.

Filed Nov. 20, 1969, Ser. No. 878,391

Int. Cl. G11b *5/40*

U.S. Cl. 179—100.2 C **8 Claims**



A head cap adapted for use with a tape machine having a plurality of heads which contact the tape, wherein the head cap is removably mountable between at least one of the heads and the tape, thus holding the tape away from the head for preventing unnecessary wear thereto.

3,636,275

HEADBLOCK ASSEMBLY OF A MAGNETIC VIDEO TAPE RECORDER

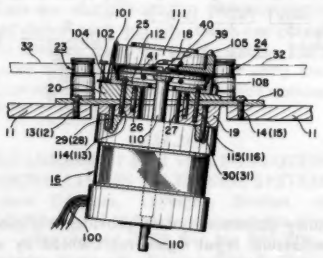
Noboru Sato, and Tatsumi Nakano, both of Tokyo, Japan, assignors to Akai Electric Company Limited, Tokyo, Japan

Filed July 1, 1969, Ser. No. 838,136

Claims priority, application Japan, July 3, 1968, 43/56568; July 13, 1968, 43/49226

Int. Cl. G11b *5/48, 21/16*

U.S. Cl. 179—100.2 T **3 Claims**



A headblock assembly of a magnetic video tape recorder, comprising a baseplate adapted for being detachably yet rigidly mounted to a chassis panel of the video tape recorder

which mounts in turn an upper mounting element and a lower mounting element, these mounting elements being inclined to contacting surface with the said baseplate and relative to the common axis of said elements, a driving electric motor attached to said lower mounting element, a tape drive drum attached to said upper mounting element, a pair of stationary tape guide means mounted on the said upper mounting element and a pair of tape guide-roller means adapted to the said baseplate.

3,636,276

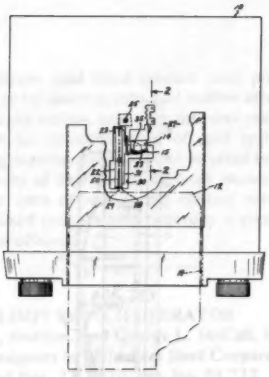
TAPE CARTRIDGE PLAYER TRANSDUCER HEAD CLEANER

Harry J. Rose, University, Ohio, assignor to Tenna Corporation, Cleveland, Ohio

Filed Nov. 26, 1969, Ser. No. 880,223

Int. Cl. G11b *5/40*

U.S. Cl. 179—100.2 Z **6 Claims**



A transducer assembly for a cartridge-type tape player which has a wiper arm movable over the pickup surface of the magnetic transducer in wiping engagement therewith so as to clean such surface prior to playing a tape. The wiper arm is operated by the insertion and withdrawal of a conventional tape cartridge into and from the tape player structure so as to move across the playing surface of the transducer to maintain such surface substantially clean of extraneous dust, magnetic materials, and/or other contaminants.

3,636,277

VIDEO TAPE RECORDER WITH SINGLE MOTOR-DRIVING HEAD WHEEL AND CAPSTAN THROUGH RESPECTIVE MAGNETIC CLUTCHES

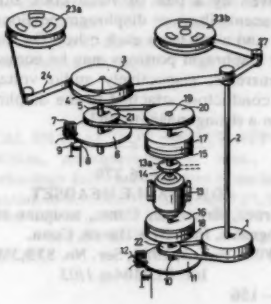
Herbert Pohler, Rosenstrasse 17,6055, Hausen bei Offenbach/Main, Germany

Filed Dec. 23, 1969, Ser. No. 887,799

Int. Cl. G11b *21/04;* **H02k** *49/10*

U.S. Cl. 179—100.2 T **4 Claims**

In a magnetic video tape recorder having one or more rotating magnetic heads, a single motor is provided and is connected with the rotating head or heads by a coupling. The coupling has an input element of a material having high remanence and permeability and requiring but a small coercive force, a so-called hysteresis material, and a permanently magnetic output element which rotates coaxially with the input element and is connected with the drive mechanism of



the rotating magnetic head or heads or with the tape-feeding mechanism.

3,636,278

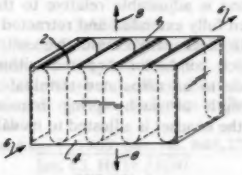
ACOUSTIC TRANSDUCER WITH A DIAPHRAGM FORMING A PLURALITY OF ADJACENT NARROW AIR SPACES OPEN ONLY AT ONE SIDE WITH THE OPEN SIDES OF ADJACENT AIR SPACES ALTERNATINGLY FACING IN OPPOSITE DIRECTIONS

Oskar Heil, San Mateo, Calif., assignor to Heil Scientific Laboratories, Inc., Belmont, Calif.

Filed Feb. 19, 1969, Ser. No. 800,579

Int. Cl. H04r *9/02*

U.S. Cl. 179—115.5PV **34 Claims**



An acoustic transducer with a new kind of diaphragm geometry and a new kind of acoustical or vibratory excitation of the diaphragm. The diaphragm comprises a plurality of substantially equal spaced and substantially parallel diaphragm portions which define between themselves small air spaces, and means connecting the diaphragm portions to each other in such a manner so as to close each of the air spaces at three sides while the fourth side is left open and with the open sides of adjacent air spaces respectively facing in opposite directions. As a result of this arrangement, the narrow air spaces between adjacent diaphragm portions get alternatingly enlarged or reduced and alternatingly air is sucked in or expelled from the adjacent air spaces during vibration of the diaphragm portions. During each half-cycle of the vibration air is sucked in one direction into every second of the adjacent air spaces and expelled in the opposite direction from the other air spaces and during the next half-cycle the motion of air into and out of adjacent air spaces is reversed. Such diaphragm arrangement moves more air with less kinetic energy than conventional diaphragms. The vibratory diaphragm portions may be directly driven by

applying an audio current, respectively an audio voltage to conductors attached to the diaphragm portions and located in a strong magnetic field, or the diaphragm portions may be indirectly driven by a pair of voice coils alternatingly attached to adjacent vibratory diaphragm portions to move the latter toward and away from each other. On the other hand, the vibratory diaphragm portions may be acoustically driven and audio currents, respectively audio voltages, may be produced in conductors attached to the diaphragm portions and moving in a strong magnetic field.

3,636,279

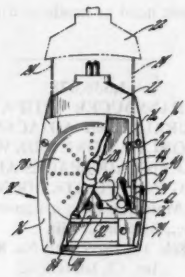
ADJUSTABLE HEADSET

Justin L. Turner, Branford, Conn., assignor to Educational Service Programs, Inc., New Haven, Conn.

Filed Nov. 3, 1969, Ser. No. 873,350

Int. Cl. H04m *1/05*

U.S. Cl. 179—156 **10 Claims**



A headset of adjustable size including a pair of headphones each having a pair of parallel tracks formed therein and receiving a pair of electrical conductors associated with a headband assembly adjustably connecting the headphones. Each headphone is adjustable relative to the headband assembly between fully extended and retracted positions of the conductors. An electrically conductive coil spring connects the end of each conductor disposed within an associated headphone case to an associated terminal mounted in the case. The length of each spring remains substantially unchanged as the headset is adjusted to its various sizes.

3,636,280

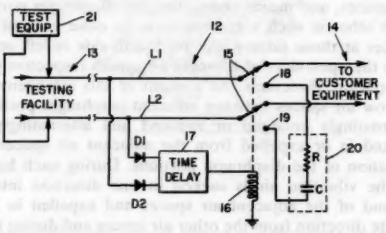
TELEPHONE LINE TESTING FROM REMOTE LOCATIONS

Louis Emery Wetzel, Santa Monica, Calif., assignor to General Telephone Company of California, Santa Monica, Calif.

Filed Sept. 17, 1970, Ser. No. 73,122

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 **4 Claims**



Telephone line testing from a remote location such as a testing facility is accomplished by providing a disconnect switch at the interface connection of the line to suitable customer equipment. A known impedance is provided at the interface connection point such that by passing a signal from the testing facility to the interface connection point the switch will disconnect the customer equipment and connect into the circuit the known impedance. Tests may then be made by passing current down the telephone line from the testing facility to the interface point, any failure to measure the known impedance indicating that trouble exists between the testing facility and the interface connection point. In this event, the customer need not be bothered by telephone men in effecting repairs. If the telephone line shows proper continuity between the testing facility and the interface connection point, it is then known that the customer's equipment is causing the trouble. The equipment can then properly be repaired by telephone men if authorized by the customer or by the customer himself.

3,636,281

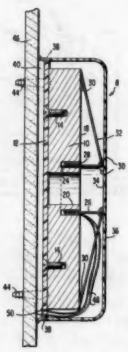
LOUDSPEAKER USING WALL AS DIAPHRAGM

Robert T. Cozart, 52 Ladoga, Tampa, Fla.

Filed Jan. 13, 1969, Ser. No. 790,665

Int. Cl. H04r *9/06*

U.S. Cl. 179—181 W **6 Claims**



An electroacoustic transducer including a drive coil mounted within the airgap of an annular permanent magnet. The drive coil is connected to the transducer case which in turn is attached to a suitable support structure such as a wall or ceiling. Electrical signals within the drive coil cause it to move, and this vibration is transmitted to the support structure which then acts as a sounding surface for the transducer.

3,636,282

SWITCH ASSEMBLY WITH IMPROVED PLUG-ACTUATING MEANS AND CONNECTION MATRIX INCLUDING STACKED PRINTED CIRCUIT BOARDS

Josef Kirchdorf, Gerlafingen, Switzerland, assignor to Ghielmetti AG, Solothurn, Switzerland

Filed Oct. 31, 1969, Ser. No. 872,901

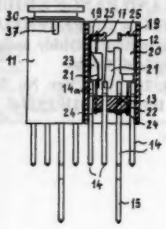
Claims priority, application Switzerland, Nov. 7, 1968, 16633/68

Int. Cl. H01h *15/00*

U.S. Cl. 200—16 R **4 Claims**

A multicontact data feeder is disclosed, the data feeder being utilized with a connection matrix having an input chan-

nel and a plurality of output channels. The data feeder comprises a switching body means having a hollow internal cavity; fixed contact pins for electrical connections to the input channel and the plurality of output channels of the connection matrix, said fixed contact pins extending into said hollow internal cavity of said switching body means; spring contact means disposed within said hollow internal cavity of said switching body means for each of said fixed contact pins, said spring contact means, when actuated, effecting electrical



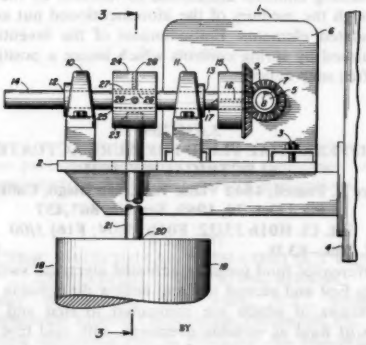
connections between said fixed contact pins; plug member means adapted to be inserted into said hollow internal cavity of said switch body means, said plug member means including cam means for selective ones of said spring contact means, said plug member means, when inserted into said hollow internal cavity of said switching body means serving to deflect selective ones of said spring contact means against the associated fixed contact pins, whereby a given data distribution mode is effected.

3,636,283

LIMIT SWITCH OPERATOR

Robert A. Yohe, Steelton, and George L. McCall, Harrisburg, both of Pa., assignors to Bethlehem Steel Corporation

Filed Nov. 23, 1970, Ser. No. 91,722
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.48 **5 Claims**



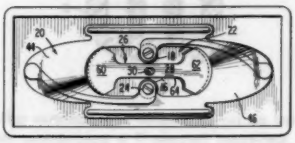
An apparatus for operating a rotating cam limit switch. The switch is fastened to the framework of a tilting electric arc furnace. The apparatus is a limit switch operator consisting of a pendulum suspended from a horizontal shaft and a pair of bevel gears. The bevel gears are mounted in meshing engagement on the limit switch shaft and the horizontal shaft respectively. As the furnace tilts, the limit switch moves in an arc around the pendulum. The pendulum remains vertical and provides the torque to the bevel gears that is required for initiating the limit switch contacts.

3,636,284

ELECTRICAL SNAP ACTION SWITCH APPARATUS

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Technology Incorporated, San Francisco, Calif.

Continuation of Ser. No. 717,090, Mar. 29, 1968
Filed Oct. 27, 1970, Ser. No. 84,534
Int. Cl. H01h *13/48*
U.S. Cl. 200—67 DA **22 Claims**



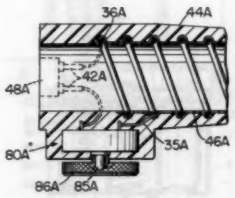
An elastically coned bistable blade carries electrical contact surfaces at its outer free end and is caused to snap back and forth between opposed spaced-apart stationary contacts in response to movements of an inner portion of the blade. In one of its contacting positions, the blade is coned in one direction and, in the other, it is coned in the opposite direction.

3,636,285

VACUUM CLEANER HOSE ASSEMBLY

William T. Wickham, Waynesville, N.C.; Frank Brown, Dayton; Donald L. Kleykamp, West Carrollton, and Otto Kossuth, Dayton, all of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 7, 1969, Ser. No. 848,272
Int. Cl. H01r *33/30*
U.S. Cl. 200—51 R **11 Claims**



A vacuum hose is provided having a plurality of reinforcing wires in the form of electrical conductors which are made as an integral part of the hose and each conductor has electrical components fixed to its opposite ends. A pair of hose connectors is provided at opposite ends of the hose end formed substantially as an integral part thereof to define an

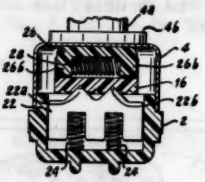
assembly with each hose connector having associated electrical components embedded therein and providing the sole support therefor.

3,636,286

MINIATURE POSITIVE ACTION TOGGLE SWITCH

Harold W. Hults, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 26, 1970, Ser. No. 14,446
Int. Cl. H01h *13/28*
U.S. Cl. 200—68 10 Claims



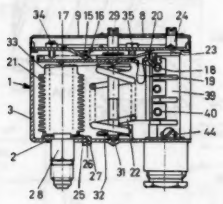
A snap-action toggle switch of the positive action type. That is, after the toggle lever has been moved to load the drive spring, a direct driving connection from the toggle lever to the contacts forces contact movement in the event they stick together. The drive spring then causes snap-action movement of the switch contacts. The return spring and drive spring mechanisms are designed to fit into a smaller space to provide a miniature switch. The switch positioning, spring-biased plunger mechanism is designed for optimum trip point relative to contact operation for nonteasing switch operation.

3,636,287

PRESSURE ACTUATABLE SNAP-ACTION SWITCH WITH SLIDE- AND CAM-ADJUSTING MEANS

Jorgen Jorgensen, Sonderborg; Nis B. Iversen, and Jens N. Andresen, both of Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jan. 15, 1970, Ser. No. 3,067
Claims priority, application Germany, Feb. 14, 1969, P 19 07 426.1
Int. Cl. H01h *35/32*
U.S. Cl. 200—83 P 5 Claims



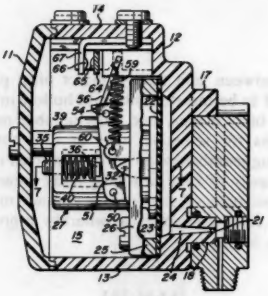
The invention relates to a snap-action switch assembly of the type having a main lever arm and an omega spring. The lever arm is acted upon by a bellows and a coil spring which are adjacently positioned on the opposite sides of a fulcrum which pivotally supports the lever arm. The omega spring engages one end of the lever arm and an adjustment feature for the omega spring is provided. The force of the omega spring can be adjusted over a relatively wide range because it does not have to perform the additional function of providing sufficient force to press the lever arm against its pivoting bearing. The adjustment means includes a slide member and a cam means accessible to an operator and for operating said slide member.

3,636,288

PRESSURE RESPONSIVE SWITCH WITH DIFFERENTIAL AND RANGE ADJUSTING MEANS INCLUDING A DIFFERENTIAL NUT

Linus E. Russell, Springfield, Ohio, assignor to Peters and Russell, Inc., Springfield, Ohio

Filed Oct. 10, 1969, Ser. No. 865,286
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 SA 12 Claims



A pressure-sensitive switch is diaphragm controlled to operate through the medium of a spring loaded actuator. The actuator seats a nut which may be differentially positioned to control the interval required for moving the switch between "on" and "off" positions. The nut follows movement of pressure responsive seat means, and is adjustable relative thereto. The switching contacts are caused to function by the actuator through the medium of the aforementioned nut and hingedly related elements. Embodiments of the invention are distinguished by spring controls which insure a positive and flutter-free snap action.

3,636,289

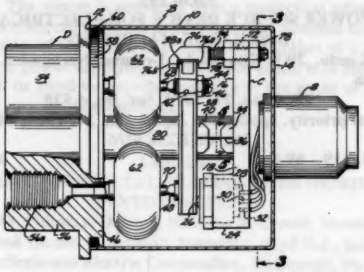
DIFFERENTIAL FLUID PRESSURE ACTUATED ELECTRICAL SWITCH

Clarence R. Possell, 4842 Viane Way, San Diego, Calif.

Filed Oct. 20, 1969, Ser. No. 867,437
Int. Cl. H01h *35/32;* F01b *19/04;* F16j *3/00*
U.S. Cl. 200—83 D 1 Claim

A differential fluid pressure actuated electrical switch that includes first and second resilient hollow deformable bodies, the interiors of which are connected to first and second sources of fluid at variable pressures, with said first source normally being at a higher fluid pressure than that in said second source. Parallel first and second force-exerting members project from said bodies, and bear against an elongate, movable actuator, which actuator when moved in a first direction, moves a spring-actuated member of an electrical switch from a first to a second position to either open or

close said switch. The actuating member is moved from said first to said second position only when the pressure of fluid in said second body is at a predetermined, elevated pressure differential relative to the fluid in said first body.



3,636,290
ONE-PIECE SLIDING CONTACT

Leonard J. Kucharski, Chester, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed June 2, 1970, Ser. No. 42,734
Int. Cl. H01h *1/46*
U.S. Cl. 200—166 D **4 Claims**

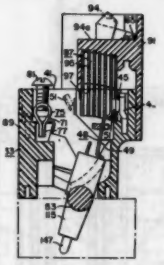
A one part contact of highly flexible multifinger construction particularly useful for high-current applications.

3,636,291
ELECTRIC SWITCHGEAR WITH CONTACT VIEWING AND CONTACT MOUNTING MEANS

Alexander R. Norden, New York, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application June 8, 1965, Ser. No. 462,361, now Patent No. 3,525,835. Divided and this application Dec. 12, 1969, Ser. No. 889,804
Int. Cl. H01h *1/58, 9/16*
U.S. Cl. 200—166 BG **4 Claims**

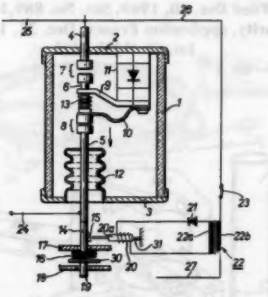
An improved switch device comprises an enclosure and a switch structure supported within the enclosure, which switch structure is constructed and arranged such that the position of the contacts can be readily determined by visual inspection from the front of the enclosure when the enclosure cover is in the open position. Means are provided for supporting the contact arm structures on an insulating support member comprising a U-shaped receiving aperture on said insulating support member, and a U-shaped contact snappable into said aperture.



3,636,292
VACUUM SWITCH FOR ALTERNATING CURRENT INTERRUPTION

Adrian W. Roth, Aarau, Switzerland, assignor to Sprecher & Schuh A.G., Aarua, Switzerland

Continuation-in-part of application Ser. No. 706,384, Feb. 19, 1968, now abandoned. This application Oct. 16, 1970, Ser. No. 81,375
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **3 Claims**



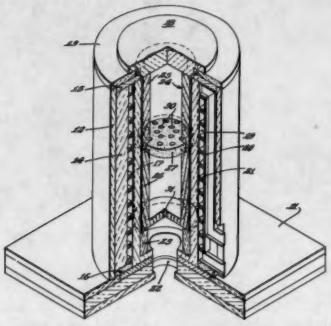
A vacuum switch for alternating current interruption comprises two pairs of separable operating contacts arranged in a vacuum chamber and connected in an alternating current circuit. A semiconductor diode is mounted within the vacuum chamber and connected for bridging one of the pairs of operating contacts. Drive means are provided for actuating said pairs of contacts in such manner that for interrupting the alternating current circuit the pair of contacts which is bridged by the semiconductor diode is caused to separate prior to separation of the other pair of contacts.

3,636,293

METHOD AND APPARATUS FOR MELTING VITREOUS-TYPE MATERIALS

Harry E. Schneider, Elmhurst, and William J. Plankenhorn, Lombard, both of Ill., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Apr. 15, 1970, Ser. No. 28,643
Int. Cl. H05b 5/00, 9/00
U.S. Cl. 219—10.49 5 Claims



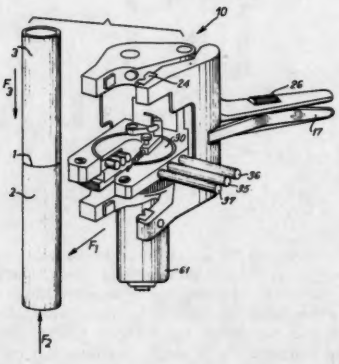
Method and apparatus for melting vitreous-type materials utilizing induction heating in a continuous process. The materials to be melted, in particle or pellet form are supported within an electrically conductive susceptor, and temporarily supported on a refractory support. The heat radiated from the inductively heated susceptor serves to render the pellets fluid whereupon they pass through suitable orifices in the refractory support into a lower chamber where they are held with additional heating for a time sufficient to complete the required time-temperature relationship.

3,636,294

SELF-CENTERING TUBE-BUTTING CLAMP

Jean Pierre Peyrot, 8 Domaine du Bel Abord, Chilly-Mazarin, Essonne, France

Filed Dec. 30, 1969, Ser. No. 889,163
Claims priority, application France, Dec. 31, 1968, 182,992
Int. Cl. B23k 9/02
U.S. Cl. 219—60 A 12 Claims



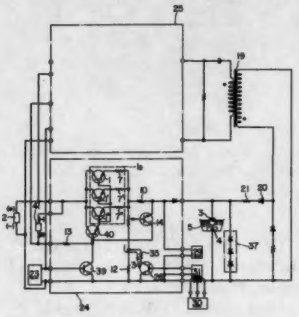
A self-centering clamp for welding, machining and checking cylindrical parts. The clamp is mounted astride two tubes butted against each other, upon which it centers and finally fixes itself. Once fixed on the tubes, the clamp permits a toothed wheel in the shape of a C to drive in rotation round the tubes, tools for welding, machining or checking same under automatic control and with programmed sequences.

3,636,295

POWER SOURCE DEVICE FOR ELECTRICAL DISCHARGE MACHINING

Iwao Kondo, 39-9 Kita-machi 1-chome, Nerima-ku, Tokyo, Japan

Filed Jan. 21, 1970, Ser. No. 4,538
Claims priority, application Japan, Jan. 21, 1969, 44/4538
Int. Cl. B23k 9/16
U.S. Cl. 219—69 C 9 Claims



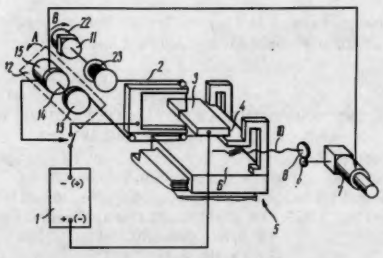
A power source device for electrical discharge machining, in which a large machining current in excess of a certain present limit is automatically reduced while continuing the machining operation. A current-detecting resistor is provided in series with a discharge gap for machining, which resistor generates an output when the machining current becomes too large. A switching element responds to the output from the current-detecting resistor and reduces the machining current.

3,636,296

ARRANGEMENT FOR STOPPING AUTOMATICALLY AN ELECTRIC SPARK ERODING MACHINE HAVING ITS WORK-PERFORMING ELECTRODE TOOL IN THE SHAPE OF A WIRE OR BAND

Gennady Gavrilovich Semin, ulitsa Tsentralnaya, 15, kv. 31, Fryazino Moskovskoi Oblasti, U.S.S.R.

Filed Dec. 15, 1970, Ser. No. 98,274
Int. Cl. B23p 1/08
U.S. Cl. 219—69 S 4 Claims



An arrangement for stopping an automatically the operation of an electric spark-eroding machine having a work-per-

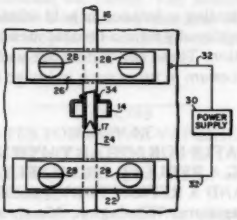
forming electrode tool thereof in the shape of a wire or band, wherein deenergization of the electric drives of the machine is effected by means of a mechanism including an overrunning clutch. The driving member of this overrunning clutch is the driving shaft of an electric motor, while the driven member of the clutch is a sleeve mounted eccentrically with respect to this driving shaft and rotatable relative thereto. The sleeve is provided with a projection adapted to engage a stationary abutment which is thus adapted to check the rotation of the sleeve and cause interruption of a source of electric power supplying an electrode which is in the shape of a wire or band to stop the machine in the event of an accidental wire or band breakage.

3,636,297

REFRACTORY METAL BRAZING WITH NIOBIUM PENTOXIDE FLUX

Willard M. Pakutka, Orange; Nicholas F. Cerulli, North Caldwell, and Gerald T. Scanlon, Somerset, all of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1970, Ser. No. 80,987
Int. Cl. B23k *1/04*
U.S. Cl. 219—85 **7 Claims**



A method for sealing the niobium end cap of a ceramic arc tube to the tantalum exhaust and fill tubulation which comprises the steps of; placing the tubulation through a close fit aperture in the end cap, painting the areas of the tubulation and end cap to be brazed with a pastelike solution of niobium pentoxide, positioning a niobium, or a niobium and a titanium, ring or wire about the tubulation in a position contacting both the end cap and the tubulation at their juncture, and passing sufficient electric current through the tubulation to cause the ring or rings to melt and seal the end cap to the tubulation.

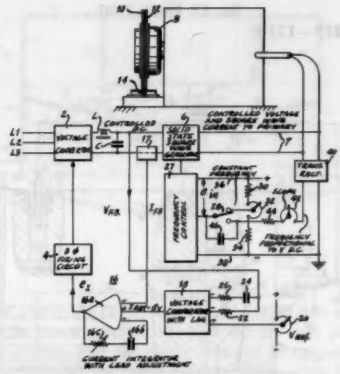
3,636,298

STATIC SQUARE-WAVE RESISTANCE TUBE WELDING SYSTEM

Robert L. Risberg, and Blakeslee G. Wheeler, both of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 20, 1969, Ser. No. 867,703
Int. Cl. B23k *11/24*
U.S. Cl. 219—108 **13 Claims**

A resistance welder system for welding a continuous seam throughout the length of a tube or pipe having controlled thyristors for generating a square-wave current of a desired amplitude and at constant or variable frequency. The power is generated and transmitted at high voltage low current and transformed at the welder electrodes to low voltage high current. The system includes a controlled DC link for obtaining a desired voltage and current from a constant voltage source, and a static square-wave generator consisting of an inverter with forcing to generate a square-wave AC current from the DC link output. The voltage converter for controlling the DC link is regulated by a voltage regulator to maintain an



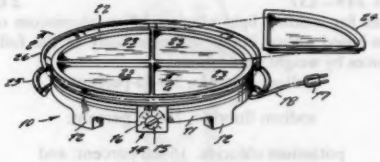
average value of AC voltage at the electrode transformer, and a fast responding minor loop current regulator to maintain constant current in the presence of transient changes in resistivity or contact resistance.

3,636,299

LAZY SUSAN HOTPLATE

Luther H. Stewart, Jr., P.O. Box 5242, San Mateo, Calif.

Filed Nov. 12, 1970, Ser. No. 88,868
Int. Cl. H05b *1/00*
U.S. Cl. 219—201 **2 Claims**



A hotplate is which to serve foods upon, the device incorporating the advantages of a hotplate and a conventional lazy susan so that the food may be maintained in a heated condition and which can be conveniently brought into convenient proximity for a person to serve. The device comprising a selective heating coil selectively controlled in temperature by a manually regulated potentiometer, the base having an upstanding central post about which a Pyrex-type of plate is pivotable, the plate being dished with individual compartments into each of which a separate Pyrex plate of corresponding shape to the compartment is fitted and each one of which is adaptable for containing a specific food intended to be kept heated while upon a dining table.

3,636,300

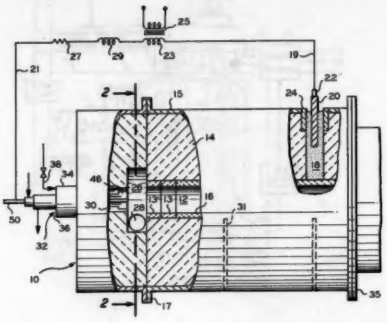
METHOD FOR THE PRODUCTION OF HIGH-TEMPERATURE GASES

Thomas J. Gunnell, and Albert F. Stegelman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Continuation of application Ser. No. 518,332, Jan. 3, 1966, now abandoned. This application Jan. 30, 1969, Ser. No. 795,323

Int. Cl. H05b *7/00*

U.S. Cl. 219—121 P **5 Claims**



Hot gases are formed by establishing an electrical discharge in substantially uniform distribution throughout a zone, passing a gas through said zone in the absence of a flame and in contact with said discharge to increase the temperature of said gas, said electrical discharge being distributed substantially uniformly through said gas. High-temperature gases formed by said method are useful in the production of carbon black.

3,636,301

FLUX FOR WELDING LIGHT ALLOYS

Anatoly Yakovlevich Ischenko, ulitsa Sholom Aleikhema, 26/23, kv. 122, and Anatoly Grigorievich Sinchuk, ulitsa Krasnoarmeiskaya, 51, kv. 37, both of Kiev, U.S.S.R.

Filed May 7, 1970, Ser. No. 35,568

Claims priority, application U.S.S.R., May 30, 1969, 1335972

Int. Cl. B23k *25/00, 35/36*

U.S. Cl. 219—137 **2 Claims**

Fluxes for welding light alloys such as aluminium or aluminium-based alloys, composed essentially of the following substances by weight percentage:

sodium chloride, 30–35 percent;

sodium fluoride, 28–30 percent;

potassium chloride, 15–20 percent; and

lithium fluoride, 20–22 percent.

The flux is mostly applicable in machine building for electroslag welding of heavy objects made of light aluminium-based alloys.

3,636,302

METAL VAPOR GENERATORS

Paolo Della Porta, and Carlo Emili, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

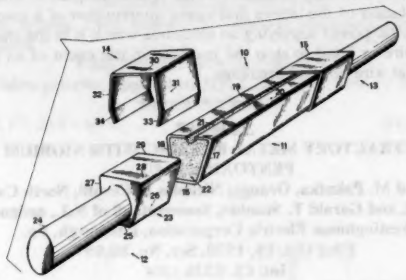
Filed Sept. 10, 1969, Ser. No. 856,567

Claims priority, application Italy, Sept. 13, 1968, 21175 A/68

Int. Cl. C23c *13/00*

U.S. Cl. 219—271 **19 Claims**

A metal vapor generator comprising: a hollow tube containing a metal vapor releasing substance, the tube having an opening to permit escape of the metal vapor; a terminal having a cross section of the same size and geometric shape as the cross section of the tube; and a retainer holding the end of the terminal against the end of the tube; whereby the



metal vapor releasing substance is held within the tube. The generator can optionally have a flexible member for temperature compensation. These generators are useful for releasing metals such as cesium in tubes such as image intensifiers.

3,636,303

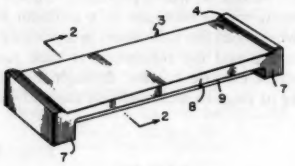
APPARATUS FOR METAL VAPORIZATION COMPRISING A REDUCED CROSS SECTION HEATER AND A REFRACTORY VESSEL

Edmund M. Passmore, Wilmington, Mass., assignor to GTE Sylvania Incorporated

Filed Mar. 10, 1971, Ser. No. 122,792

Int. Cl. C23c *13/02*

U.S. Cl. 219—271 **10 Claims**



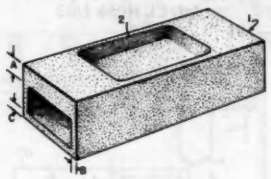
An improved evaporation source for vacuum deposition of metals comprises a refractory vessel heated and supported by a separate heater. The vessel has a cavity to contain the metal to be evaporated and has a uniform wall thickness beneath the cavity. The heater comprises an electrically conductive refractory material shaped so as to support the vessel only at the ends thereof but to be in efficient heat transfer relationship therewith. Additionally, the heater has a reduced cross section between its ends in order to provide higher end contact area than cross-sectional area and to also prevent buckling when the heater is supported by axial compressive contacts.

3,636,304

APPARATUS FOR METAL VAPORIZATION COMPRISING A HEATER INSERTED INTO A REFRACTORY VESSEL

Edmund M. Passmore, Wilmington, Mass., assignor to GTE Sylvania Incorporated

Filed Mar. 10, 1971, Ser. No. 122,791
Int. Cl. C23c *13/02*
U.S. Cl. 219—271 7 Claims



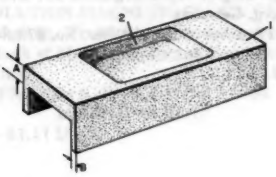
An improved evaporation source for vacuum deposition of metals comprises a refractory vessel heated and supported by a separate heater inserted in the vessel. The vessel has a cavity to contain the metal to be evaporated and has a uniform wall thickness beneath the cavity. The heater comprises an electrically conductive refractory material shaped so as to support the vessel only at the ends thereof but to be in efficient heat transfer relationship therewith.

3,636,305

APPARATUS FOR METAL VAPORIZATION COMPRISING A HEATER AND A REFRACTORY VESSEL

Edmund M. Passmore, Wilmington, Mass., assignor to GTE Sylvania Incorporated

Filed Mar. 10, 1971, Ser. No. 122,799
Int. Cl. C23c *13/02*
U.S. Cl. 219—271 7 Claims



An improved evaporation source for vacuum deposition of metals comprises a refractory vessel heated and supported by a separate heater. The vessel has a cavity to contain the metal to be evaporated and has a uniform wall thickness beneath the cavity. The heater comprises an electrically conductive refractory material shaped so as to support the vessel only at the ends thereof but to be in efficient heat transfer relationship therewith.

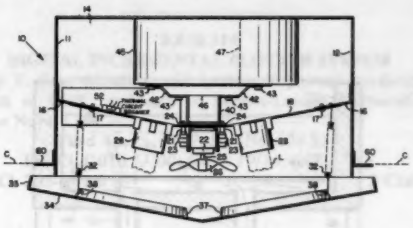
3,636,306

INFRARED HEATER AND VENTILATOR UNIT

Ward H. Bumpus, Newark, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,079
Int. Cl. F24h *3/04;* H05b *3/06*
U.S. Cl. 219—361 2 Claims

An infrared heater and ventilator unit comprises a rectangular, sheet metal housing adapted to be mounted in the ceiling of a room with the lower end of the housing approximately flush with the ceiling. Two infrared lamps are mounted in sockets that are fastened to the underside of a narrow bar or strap that extends centrally across the housing. A small fan is mounted on the strap between the lamps to blow heat therefrom downwardly into the room; and a ventilator blower



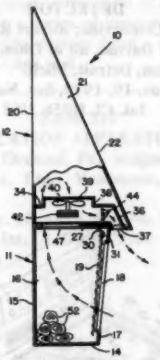
is mounted above the fan to draw air upwardly into the housing from the room, and to exhaust the air into the space above the ceiling. The fan motor is wired to operate whenever one or more of the lamps is energized; and the blower is operable independently of the lamps.

3,636,307

ELECTRIC ARTIFICIAL FIREPLACE

Richard A. Pearce, Rochester, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed July 17, 1970, Ser. No. 55,819
Int. Cl. F24h *3/04;* H05b *1/00;* F24h *9/02*
U.S. Cl. 219—370 3 Claims



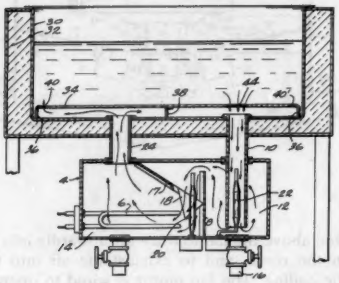
The fireplace includes a hearth section having a screen-covered opening in its front wall, and a hollow canopy section fastened over the hearth section and extending beyond the sides and front thereof so that spaces are formed between the sections at the front and sides of the fireplace. An andiron and imitation logs may be placed in the hearth section. A fan and electrical heating elements are mounted in a chamber within the canopy. This chamber has an inlet opening on the interior of the canopy, and an outlet opening at the front of the fireplace. When the fan operates, air is drawn into the chamber through the screened opening in the hearth section and the lateral spaces between the sections, and is heated by the electrical elements to be discharged through the outlet and send heat into the room.

3,636,308

APPARATUS FOR RECONSTITUTING FROZEN FOOD

Kenneth G. Hatch, Milwaukee, Wis., assignor to Hatco Corporation, Milwaukee, Wis.

Filed Apr. 9, 1970, Ser. No. 26,907
Int. Cl. B01j *11/74*
U.S. Cl. 219—439 4 Claims



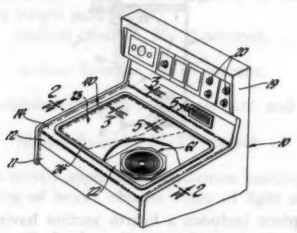
To thaw and cook frozen food the food is placed on a supporting baffle in a container in which it is completely immersed in water or other cooking liquid and the liquid is caused to circulate rapidly through all parts of the food for uniform heating at an accelerated rate of heat exchange. Rapidity of circulation is achieved by heating the water in one part of a closed circuit and directing it by baffles.

3,636,309

CERAMIC-TOP COOKING ASSEMBLY FRACTURE DETECTOR

Homer W. Deaton, Centerville; Robert R. Gould, Jr., and Roy R. Smith, both of Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1970, Ser. No. 90,948
Int. Cl. H05b *3/68*
U.S. Cl. 219—452 3 Claims



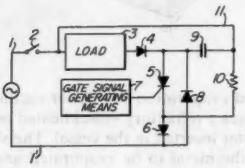
A protective circuit arrangement for an infrared radiant-type cooking assembly including a frangible utensil-supporting cover plate of infrared transmissive material with underlying heater blocks in contact with the cover plate and having an open-coil uninsulated resistance element supported on the heater blocks in spaced relation to the plate. A conductive stripe located around the periphery of the cover plate is connected in the circuit having an electronic switch arrangement for sequentially open circuiting the powerlines to the cooking assembly should breakage of the cover plate occur to obviate any shock hazard.

3,636,310

HEAT-RESPONSIVE TEMPERATURE CONTROL DEVICE

Tomoyuki Hosokawa, Takarazuka; Toshii Tsugeki, Takatsuki, and Shigeru Kusunoki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 17, 1970, Ser. No. 29,460
Claims priority, application Japan, Apr. 22, 1969, 44/32423
Int. Cl. H05b *1/02*
U.S. Cl. 210—501 6 Claims



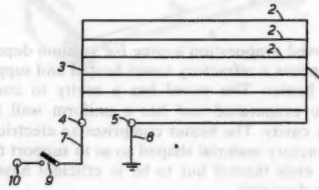
An improved heat-responsive temperature control device used for electric blankets, electric carpets and the like in which the reliability thereof is improved and the radio interference thereby is obviated by performing nonmechanical contacting temperature control and zero-voltage switching of the heater.

3,636,311

HEATING DEVICES FOR VEHICLE WINDOWS

Robert Hugo Steger, Waldburgstrass 29, Boblingen, Baden Wuttemberg, Germany

Filed Nov. 21, 1969, Ser. No. 878,847
Int. Cl. H05b *3/06*
U.S. Cl. 219—522 1 Claim



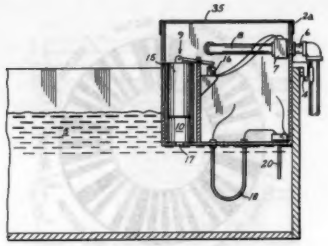
A heating device for attachment to a vehicle window for deicing, defrosting or demisting purposes. The device comprises a sheet of flexible transparent material and means, such as an adhesive border, for attaching it to the vehicle window, and an electrical resistance heating element in the form of a layer of electrically conducting material, formed for example from metallic particles carried in a binder, bonded to the surfaces of the sheet.

3,636,312

LIVESTOCK WATER TANK WATER TEMPERATURE CONTROL APPARATUS

Robert F. Dreher, 7861 Kenwood, and Albert H. Dreher, 6873 Brighton Blvd., both of Commerce City, Colo.

Filed Feb. 6, 1970, Ser. No. 9,156
Int. Cl. A01k 7/02; H05b 3/06
U.S. Cl. 219—523 5 Claims



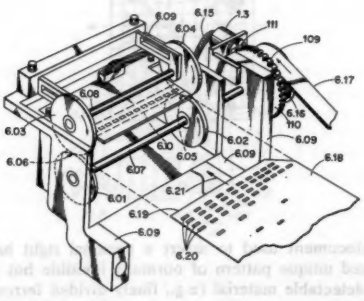
An apparatus for controlling the water temperature in a livestock tank is provided with a conduit including a solenoid valve for controlling the supply of water to the tank. A water level detector controls the valve operation to maintain a predetermined water level in the tank. A first electric heater, which may comprise an electric light bulb, is provided adjacent the valve for heating the valve to prevent freezing. A second electric heater is provided for heating the water in the tank. In one embodiment, the conduit, valve, water level detector and first and second heaters are supported by a closed housing arranged to be removably mounted in the tank from the top edge thereof. This embodiment also includes separate thermostats for controlling operation of each of the first and second heaters. In another embodiment, the conduit, water level detector, valve and first and second heaters are permanently mounted to the tank.

3,636,313

HIGH-RESOLUTION MAGNETIC CLOCK GENERATOR

Ivan N. Markowitz, Framingham, and Abraham Cherian, Marlboro, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed May 6, 1970, Ser. No. 34,934
Int. Cl. G06k 7/016
U.S. Cl. 235—61.11 D 21 Claims



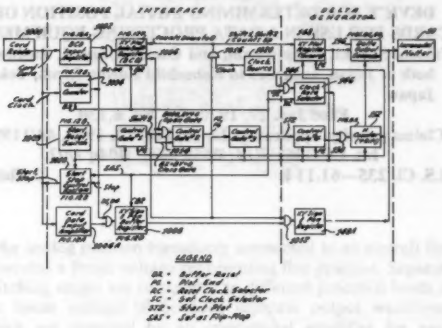
An improved high-resolution magnetic clock generator is disclosed for generating timing pulses particularly useful in combination with an electronic punched card reader for timing or synchronizing the reading and/or transmission of information being stored in uniformly spaced columns of punched cards. A magnetoresistor assembly in combination with a rotating toothed wheel or gear generates two sinusoidally varying electric signals 90° out of phase with each other, said signals being subsequently processed through a circuit means to convert said sinusoidally varying signals to an electric pulse train whose frequency is proportional to wheel speed and independent of wheel eccentricity.

3,636,314

DIGITAL INCREMENTAL PLOTTER SYSTEM

Philip T. Kan, Glendale, and Andrew S. Huson, Northridge, both of Calif., assignors to Benson-Lehner Corporation, Van Nuys, Calif.

Filed Apr. 6, 1967, Ser. No. 628,923
Int. Cl. G01d 11/00; G05b 19/16; G06g 7/64
U.S. Cl. 235—61.6 R 3 Claims



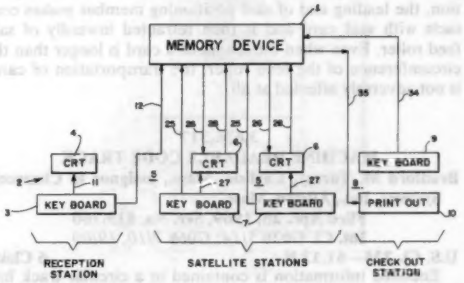
An improved digital incremental plotter system is provided in which information to be plotted is derived from an associated digital computer in the form of successive blocks of data each comprising a series of instructions, either directly on-line, or in an off-line manner from a magnetic tape transport or equivalent storage unit.

3,636,315

GUEST IDENTIFICATION APPARATUS AND METHOD

Charles P. Comeau, Oreland, Pa., assignor to Captain International Industries, Ltd., Vancouver, British Columbia, Canada

Filed Nov. 10, 1969, Ser. No. 875,146
Int. Cl. G06k 15/00
U.S. Cl. 235—61.7 B 7 Claims



Apparatus and method to rapidly check the identity of a person against known identifying information prior to per-

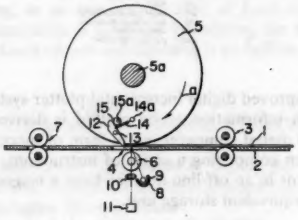
mitting that person to charge incurred expenses to the account of a known person. The apparatus and method also provide a system for rapidly recording charged expenses, after checking identity, as being incurred by the known person. The system is particularly useful in hotels and motels where a guest or other known person is permitted to incur expenses at various locations, such as a restaurant, where that person may not be known to the cashier. The person who wishes to make a charge provides the cashier or other employee with his name and other identifying information such as a room number or account number and, prior to recording this charge against the account of the person so identified, the cashier or other employee is provided with a visual display of correct descriptive information for comparison. If the information given by the charging guest is correct, the charges incurred are then recorded against the account of the known person.

3,636,316

DEVICE FOR DETERMINING INITIAL POSITION OF CARDS FOR USE IN A DATA PROCESSING EQUIPMENT

Takami Suzuki, Fujisawa-shi, and Osamu Uozumi, Zushi-shi, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jan. 27, 1970, Ser. No. 6,130
Claims priority, application Japan, Feb. 12, 1969, 44/11996
Int. Cl. G06k *7/14;* **B65h** *9/06;* **H04q** *1/02*
U.S. Cl. 235—61.11 E **3 Claims**



A device for determining the initial position of a card for use in a data processing equipment, said device having a positioning member which is retractably extended beyond the outer peripheral surface of a feed roller. When upon rotation of said feed roller said positioning member reaches a predetermined position and when the card exists at said position, the leading end of said positioning member makes contacts with said card and is then retracted inwardly of said feed roller. Even when the length of a card is longer than the circumference of the feed roller, the transportation of cards is not adversely affected at all.

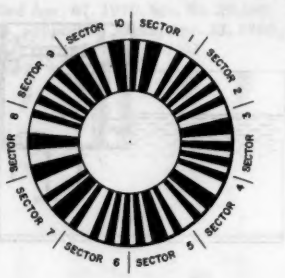
3,636,317

MACHINE READABLE CODE TRACK

Bradford M. Torrey, Carlisle, Mass., assignor to Charecogn Systems, Inc., Allston, Mass.

Filed Apr. 28, 1969, Ser. No. 819,760
Int. Cl. G02b *5/14;* **G06k** *7/10, 19/00*
U.S. Cl. 235—61.12 N **6 Claims**

Encoded information is contained in a circular track having sector patterns formed by abutting segments. The segments are all of equal angular extent and extend around the track with each sector containing the same number of segments. Each segment has a binary value and the sequence of binary segments in a sector represents the encoded information. Each different sequence can, for example, represent a different decimal numeral. An encoded "start" sector is employed that is not duplicated by any sequence of segments that can occur from assembling the decimal coded sectors in any order whatsoever. The circular track is thereby assured of containing within it only one "start" pattern regardless of



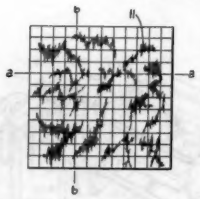
the other information encoded in the track. The sector codes are chosen so that when the sectors are assembled in abutting relation, no more than two like valued segments occur in succession in the track. The transitions between differently valued segments provide the timing information for decoding the markings.

3,636,318

VERIFIABLE IDENTIFICATION DOCUMENT

Gunnar Lindstrom, and Gunde Schullstrom, both of Linkoping, Sweden, assignors to Saab Aktiebolag, Linkoping, Sweden

Filed June 24, 1969, Ser. No. 836,000
Claims priority, application Sweden, June 24, 1968, 8489/68
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.12 M **4 Claims**



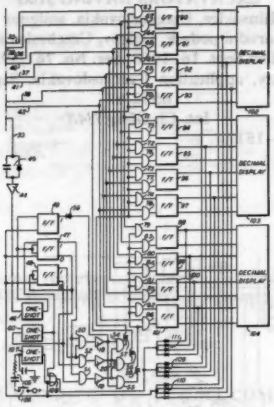
A document used to assert a personal right has a randomized unique pattern of normally invisible but mechanically detectable material (e.g., finely divided ferromagnetic material) in a zone overlapping any visible indicia identifying the owner. The document is presented to a mechanical reader which scans the pattern along predetermined lines and records resultant output signals, along with an identifying record. Upon subsequent presentation, it is similarly scanned, for comparison with the recording to confirm its authenticity. Methods of producing appropriate patterns are disclosed.

3,636,319

CIRCUIT FOR DISPLAYING DATA KEYED INTO DATA SYSTEM

Earl H. Nixon, Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,665
Int. Cl. H03k 21/22
U.S. Cl. 235—92 EA 2 Claims



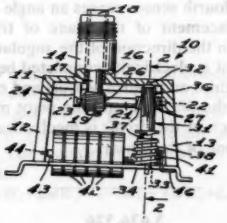
Data from a keyboard entered into a data system is displayed on decimal output units. A counter stepped by each digit entered operates a plurality of gates to direct the data to a particular register which operates a display unit in accordance with the significance of the order of the digit. In an alternative embodiment, each digit is entered into an end display unit and then successively shifted across the display units as the next digit is entered.

3,636,320

NONREVERSIBLE ODOMETER

George C. Wallis, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 23, 1970, Ser. No. 64,049
Int. Cl. G01c 22/00
U.S. Cl. 235—95 2 Claims



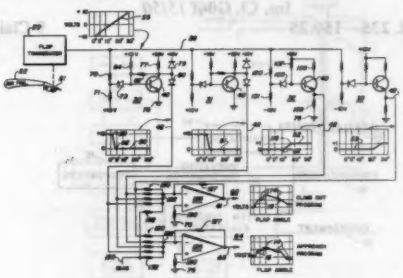
A nonreversible odometer for a driven vehicle includes a plurality of driven number wheels which display the total distance traveled by the vehicle. The gear train of the odometer is designed so that an input thereto which increases the total indicated travel of the vehicle is transmitted through the gear train to increase the travel distance displayed on the number wheels. On the other hand, if the input to the odometer is one which would decrease the total displayed travel of the vehicle, the drive between the input shaft and the number wheels is interrupted and no decrease is effected.

3,636,321

AIRCRAFT REFERENCE PROGRAM GENERATOR

Robert K. Kirschner, Bellevue, Wash., assignor to Sundstrand Data Control, Inc.

Filed Dec. 10, 1969, Ser. No. 883,852
Int. Cl. G06g 7/26, 7/78
U.S. Cl. 235—150.2 12 Claims



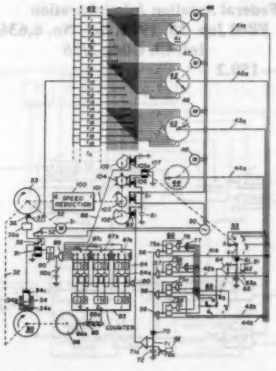
An analog position transducer connected to an aircraft flap generates a linear voltage representing flap position. Separate switching stages are responsive to different potential levels of the linear voltage to produce separate output waveforms which are summed by an operational amplifier for each reference program which is to be generated. The disclosed reference programs correlate desired angle of attack to flap position for an aircraft approach program and a climbout program.

3,636,322

OPTIMIZATION WITH FUNCTION GENERATORS

Robert F. Wheeling, Mullica Hill, N.J., assignor to Mobil Oil Corporation

Filed Feb. 15, 1963, Ser. No. 258,791
Int. Cl. G05b 13/02
U.S. Cl. 235—150.1 5 Claims



Method and apparatus for optimizing a system which includes the selection from a plurality of function models of a

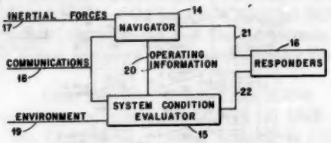
fractional portion of such models as a test group. Thereafter, a member of the group having characteristics most nearly corresponding with a selected function characteristic is then optimized. The system is then sampled at a point in the region of the point corresponding with the optimum of the member selected from the test group.

3,636,323

GEOGRAPHIC POSITION LOCATOR

John D. Salisbury, Livermore; Marvin R. Gustavson, Danville, both of Calif., and John S. Foster, Falls Church, Va., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 1, 1970, Ser. No. 33,803
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.25 **9 Claims**



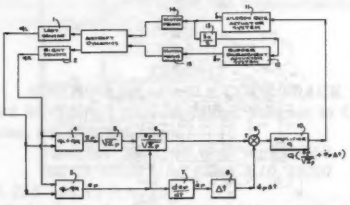
A system and method for tracking its own geographic position, comparing that position with stored boundary data, i.e., a "map," and responding whenever the apparatus crosses the boundary as defined on the "map." In operation, inertial measurements are processed to produce signals representative of computed position. These signals are compared with stored positional data, whereupon a response mechanism may be activated. The system includes a means for determining its motion state so that the system can calibrate itself when there is no significant motion. Thus, the system offers new options for the use of conventional as well as nuclear weapons, as well as for other type of vehicle position determination.

3,636,324

AIR DATA LATERAL-DIRECTIONAL STABILITY AUGMENTATION SYSTEM

Daniel O. Dommasch, Blawenburg, N.J., assignor to The United States of America as represented by the Administrator of the Federal Aviation Administration

Filed Jan. 28, 1970, Ser. No. 6,636
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.2 **6 Claims**



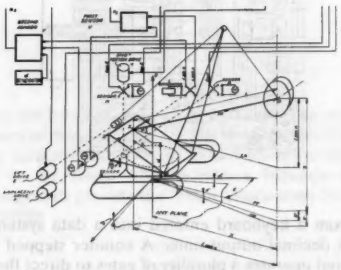
A system designed to augment lateral-directional stability of aircraft without the use of conventional gyroscopic sensing elements. A logic control system is used to interpret the dynamic pressure signals sensed near each wingtip, and the output of this logic can be used to provide actuation by pneumatic, electrical, or hydraulic actuations. Operation of both ailerons and rudder is normally involved, although aileron only control is possible in aircraft having inherently high directional damping.

3,636,325

ANALOG-PROGRAMMED CONTROL SYSTEM FOR EXCAVATORS HAVING JIBS

Josef Chytil, Hlusovice, Czechoslovakia, assignor to Unicovske strojirny, narodni podnik, Unicov, Czechoslovakia

Filed Sept. 16, 1968, Ser. No. 761,393
Claims priority, application Czechoslovakia, Sept. 14, 1967, 6552/67
Int. Cl. G06g *7/48*
U.S. Cl. 235—151 **5 Claims**



An analog control system automatically controls the operation of an excavator having a jib and a wheel mounted on the jib and determines the position of the axis of the wheel in a system of coordinates derived from the motion of the excavator. A first sensor senses a coordinate x representing the normal distance from the axis of the wheel to the pivot axis of the excavator. A second sensor senses coordinate z representing the normal distance from the axis of the wheel to the plane of travel of the excavator. A third sensor senses an angle ϵ representing the angular displacement of the projection of the normal distance from the axis of the wheel to the pivot axis to the plane of travel and the pivot motion of the excavator. A fourth sensor senses an angle δ representing the angular displacement of the plane of travel from the horizontal plane in the direction of the angular displacement ϵ. A control circuit is electrically connected between each of the first, second, third and fourth sensors and each of the displacement drive, the lift drive and the pivot motion drive of the excavator. Each of the drives is mechanically coupled to a corresponding one of the sensors.

3,636,326

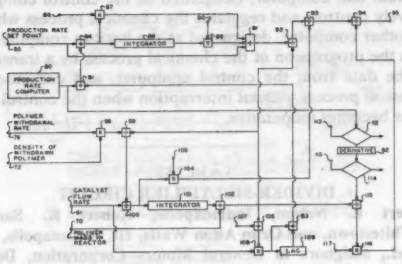
CONTROL SYSTEM FOR POLYMERIZATION REACTORS

Dexter E. Smith, and William S. Stewart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 24, 1970, Ser. No. 58,041
Int. Cl. G06g *7/58*; G05b *11/42*; B01j *9/00*
U.S. Cl. 235—151.12 **6 Claims**

The flow of catalyst to a polymerization reactor is controlled in response to a computation of the polymer produc-

tion rate. A signal representative of the computed production rate is passed through a gated derivative controller and di-



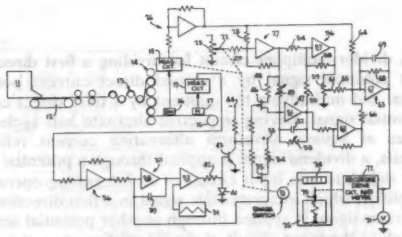
vided by a signal representative of the catalyst productivity. The quotient is employed to modify the computer production rate control signal.

3,636,327

TOTAL CONDITIONED WEIGHT COMPUTER

Paul H. Troutman, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Dec. 22, 1969, Ser. No. 887,084
Int. Cl. G01n *5/02*
U.S. Cl. 235—151.33 **10 Claims**



A system for computing total conditioned weight of a fiber sheet during manufacture responds to signals derived from moisture and basis weight gauges, a well as indications of suppressed zero value for basis weight and a conditioned weight factor. The signals and indications are combined in accordance with:

$$\Delta CW = K_{cw}(BW_s + \Delta BW)(1-M) - (BW_s + \Delta BW)M + BW \quad (a),$$

where:

ΔCW =the total conditioned weight deviation from a suppressed zero basis weight value;

K

BW_{cw} =conditioned weight factor;

BW_s =suppressed basis weight value;

ΔBW =basis weight gauge output, as a deviation of basis weight from suppressed zero basis weight value; and

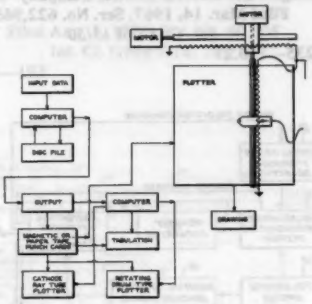
M =moisture percentage of total weight as derived from a moisture gauge.

3,636,328

AUTOMATIC DESIGNING

Theodore H. Korelitz, Newton, and Alvin C. Brodie, Greenbush, both of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.

Continuation-in-part of application Ser. No. 419,466, Dec. 18, 1964, which is a continuation-in-part of application Ser. No. 223,324, Sept. 13, 1962, now abandoned. This application Sept. 3, 1968, Ser. No. 767,891
Int. Cl. G06g *7/48*
U.S. Cl. 235—151.1 **8 Claims**



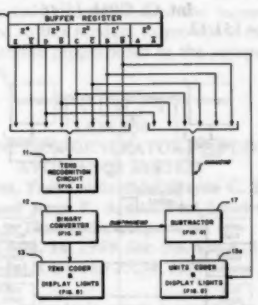
An automated designing system which includes the steps of orienting mechanical units into a plot plan, converting the orienting plot plan data to algorithmic form acceptable to a computer, orienting the plot plan elements dimensionally within the memory of the computer, imposing design-significant limits upon the computer operation, operating the computer to produce within its memory linear-significant data interconnecting elements of said plan and then converting said data from the memory of said computer to visible form either directly or from intermediate storage form.

3,636,329

FIVE-BIT BINARY TO DECIMAL TRANSLATOR

Richard G. De Sipio, Warminster, and Patrick J. Finnegan, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Apr. 28, 1970, Ser. No. 32,673
Int. Cl. H03k *13/24*
U.S. Cl. 235—155 **4 Claims**



A five-bit binary word is displayed as an alpha-numeric tens digit and an alpha-numeric units digit on adjacent seven-segment display tubes. The five-bit binary word is processed

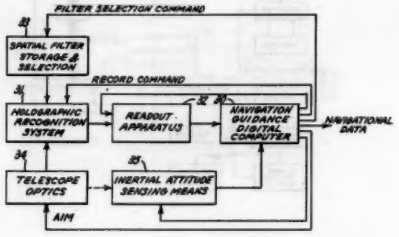
by a tens recognition system in order to obtain the tens digit corresponding to the value of the binary word. The tens digit is then converted to binary form and is displayed as a tens digit and is also subtracted from portions of the original five-bit binary word in order to obtain the value of the units digit in binary form. This value is then displayed as the units segment.

3,636,330

AUTONOMOUS SPACE NAVIGATION SYSTEM UTILIZING HOLOGRAPHIC RECOGNITION

John M. Holeman, and Joseph D. Welch, both of Schenectady, N.Y., assignors to General Electric Company

Filed Mar. 14, 1967, Ser. No. 622,965
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.27 **21 Claims**



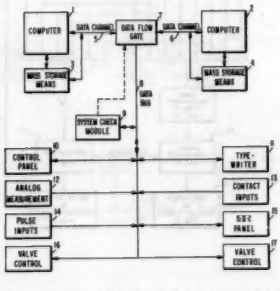
A navigation system in which a spacecraft "fix" or positional information is obtained by producing, from collected light, an image of a field of view from the spacecraft and thereafter comparing this image, in coherent light, with a spatial filter of a reference region. Correlation results in application of one input signal to a navigation computer. Comparison with a second input signal supplied to the computer from an inertial reference affixed to optical means for gathering the light emanating from the viewed region results in production of useful navigational data by the computer.

3,636,331

METHOD AND SYSTEM FOR THE AUTOMATIC CONTROL OF CHEMICAL PLANTS WITH PARALLEL-CONNECTED COMPUTER BACKUP SYSTEM

Hermann Amrehn, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed June 14, 1968, Ser. No. 737,171
Claims priority, application Germany, June 16, 1967, C 42634
Int. Cl. G06b *15/46*
U.S. Cl. 235—151.12 **25 Claims**



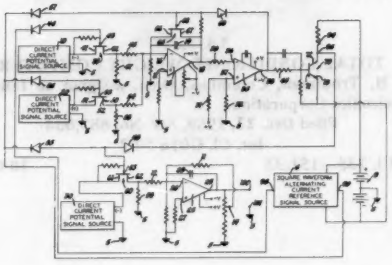
A method and system for the automatic control and regulation of chemical processes in chemical plants using digital process computers which comprises operating at least two identical computers in parallel, each equipped with an operating core storage means (principal memory means) and a mass storage means (secondary memory means), the computers being connected in parallel to each other and connected with a chemical plant by means of a data flow bus wherein one computer, designated as the control computer, actively controls and regulates the chemical process whereas the other computer, designated as the backup computer, follows the progression of the chemical process by a transmittal of the data from the control computer, and continues the chemical process without interruption when the control computer becomes inoperative.

3,636,332

DIVIDER-MULTIPLIER CIRCUIT

Robert E. Nelson, Indianapolis; Robert K. Sanders, Whitestown, and Oran Alton Watts, III, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1970, Ser. No. 57,202
Int. Cl. G06g *7/16, 7/18*
U.S. Cl. 235—195 **6 Claims**



A divider-multiplier circuit for dividing a first direct current potential signal by a second direct current potential signal and multiplying the quotient by a third direct current potential signal. During respective alternate half cycles of a series of square waveform alternating current reference signals, a dividend signal is applied through a potential sensitive switch to one input circuit of an integrating operational amplifier, which integrates this signal in a first direction, and a divisor signal is applied through another potential sensitive switch to the input circuit of the integrating operational amplifier which results in an integration thereby of the divisor signal in a second opposite direction. While the second direct current potential signal is being integrated, the third direct current potential signal is applied through a third potential sensitive switch to a direct current potential signal averaging circuit until the second direct current potential signal has been integrated to substantially zero, at which time a switching arrangement sensitive to a substantially zero output signal from the integrating operational amplifier extinguishes the third potential sensitive switch.

3,636,333

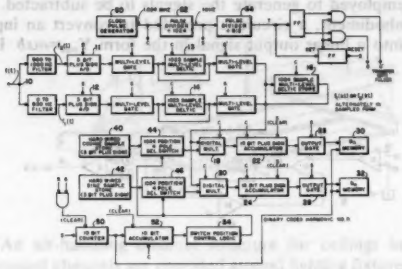
FOURIER COEFFICIENT GENERATOR

William E. Klund, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 28, 1970, Ser. No. 6,620
Int. Cl. G06f *7/38, 15/34*
U.S. Cl. 235—156 **4 Claims**

Any time segment of a time-varying waveform may be expressed in terms of a Fourier series. That is knowledge of the

complex-amplitude frequency spectrum of the waveform, which is identical to knowledge of the Fourier series coefficients for the waveform segment, enable one to reconstruct



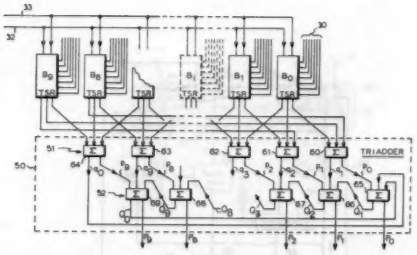
the waveform over the time segment in question. This invention is an improved method for generating the Fourier series coefficients corresponding to such a waveform segment.

3,636,334

PARALLEL ADDER WITH DISTRIBUTED CONTROL TO ADD A PLURALITY OF BINARY NUMBERS

Antonin Svoboda, Santa Monica, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 2, 1969, Ser. No. 788,486
Int. Cl. G06f 7/50
U.S. Cl. 235—175 **22 Claims**



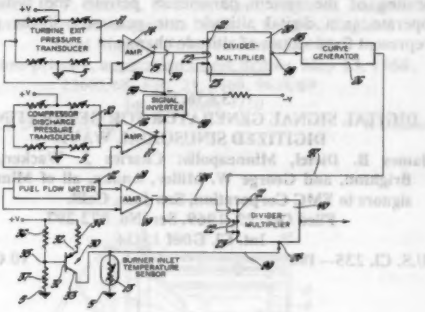
Parallel addition of 2^n-1 binary numbers is provided by storing the numbers to be added in registers such that bits of the same order are stored in the same register. The number of binary ones in a given register is determined asynchronously by shifting binary ones to one end of the register and detecting the boundary between ones and zeros. A code converter translates the detected number of ones in the given register into a binary-coded group of digital signals, such as a triad of binary-coded signals 2^iR, $2^{i+1}S$ and $2^{i+2}T$(when $n=3$), where i is the order of the given register. A parallel adder adds the binary-coded signals of equal weight, such as a triadder when $n=3$. To add more numbers, it is simply necessary to expand the parallel adder, such as to a quadriadder when $n=4$. However, to add up to 2^7-1 numbers, a cascade arrangement is preferred in which registers and networks are expanded in an arrangement strictly analogous with that for generating triads when $n=3$, but with seven-bit code groups as inputs to the arrangement for adding 2^3-1 numbers. Thus, by adding just one unit to n, it is possible to add $2^{n+1}-2^n$ more numbers. The advantage increases with n, which can be increased without limit by further cascading.

3,636,335

TURBINE INLET TEMPERATURE COMPUTER

Robert E. Nelson, Indianapolis; Robert K. Sanders, Whitestown, and Oran Alton Watts, III, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1970, Ser. No. 60,305
Int. Cl. G06g 7/16, 7/57
U.S. Cl. 235—193 **4 Claims**



The turbine expansion ratio is calculated by a divider-multiplier circuit which divides a direct current compressor discharge pressure signal of a magnitude proportional to the compressor discharge pressure by a direct current turbine exit pressure signal of a magnitude proportional to the turbine exit pressure to produce a direct current turbine expansion ratio signal of a magnitude proportional to the turbine expansion ratio. A curve generator responsive to the turbine expansion ratio signal produces the reciprocal of a K factor signal which is a function of the turbine expansion ratio signal. A direct current mass fuel flow signal of a magnitude proportional to the mass fuel flow is divided by the compressor discharge pressure signal and the quotient multiplied by the reciprocal of the K factor signal in a second divider-multiplier circuit and a direct current burner inlet temperature signal of a magnitude proportional to the burner inlet temperature is added to this product to provide a direct current signal of a magnitude proportional to the computed turbine inlet temperature.

3,636,336

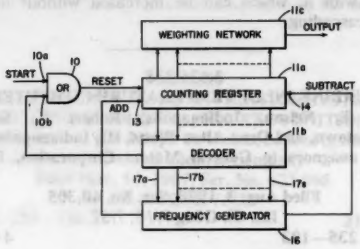
DIGITAL FUNCTION GENERATOR FOR COLLISION AVOIDANCE SYSTEM

Samuel R. Everett, Fort Lauderdale; Wayne G. Shear, Pompano Beach, and Jorge E. Ardila, Fort Lauderdale, all of Fla., assignors to The Bendix Corporation

Filed Sept. 16, 1969, Ser. No. 858,412
Int. Cl. G06b 15/34, 15/48
U.S. Cl. 235—197 **9 Claims**

Each pulse in a pulse train resets a counter to a predetermined initial state. A frequency generator generates a plurality of timing signals each of which comprises a different predetermined frequency. A gating means controlled by the state of the counter selects one of the timing signals to count down the counter. The state of the counter at the time of

counter reset is thus related to the pulse repetition frequency of the pulses. Scaling of the system parameters permits the system to generate a sequence of straight line segments



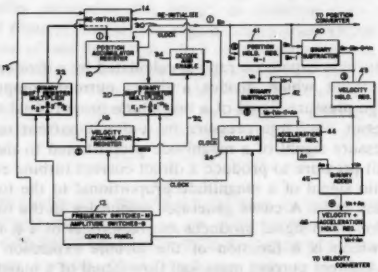
which approximate a desired function. In particular, proper scaling of the system parameters permits the system to operate as a digital altitude rate generator if the pulses represent fixed values of altitude change.

3,636,337

DIGITAL SIGNAL GENERATOR FOR GENERATING A DIGITIZED SINUSOIDAL WAVE

James B. Dietel, Minneapolis; Charles J. Wacker, New Brighton, and George W. Miller, Anoka, all of Minn., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 29, 1969, Ser. No. 872,297
Int. Cl. G06f *15/34*
U.S. Cl. 235—197 **10 Claims**



Digital signals are generated representative of successive positions on a sinusoidal curve by means of a pair of accumulator registers and a pair of binary shift registers with the registers being alternately positioned and serially connected in a closed-loop system and activated by a split-phase clock so that each accumulator register alternately receives an incremental number from one of the adjacent shift registers representing the number in the other accumulator register multiplied by a predetermined factor. The output of one of the accumulator registers defines a new positional signal at each clock pulse which order can then be processed to provide a corresponding digital velocity signal.

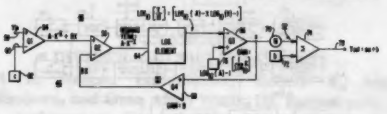
3,636,338

CONTINUOUS FUNCTION GENERATION

Albert C. Abnett, Westerville, and Jack S. Alexander, Columbus, both of Ohio, assignors to Reliance Electric Company, Columbus, Ohio

Filed July 31, 1969, Ser. No. 846,485
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 **16 Claims**

There is disclosed a method and apparatus for transforming an input signal $Y_{in}=f(x)$ into an output signal $Y_{out}=g(x)$ involving approximation of the input by a function having a plurality of terms which are functions of the independent variable, generating electrical signals representing each of the terms of the approximating function except for a designated remainder term, and subtracting the signals representing the generated terms from the input signal thereby yielding the designated remainder term, the latter being employed to generate the signals to be subtracted. In one embodiment, a circuit is provided to convert an input signal into a linear output signal in the form $Y_{out}=mxb$. In



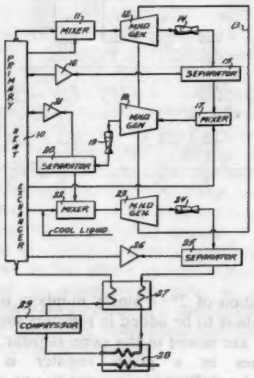
another embodiment, a circuit is provided for converting an input signal into an output signal in power series forms. The circuits are closed loop signal processors in which the forward loop operates to subtract the terms of the approximating function from the input signal to yield the designated remaining term, and the feedback operates to convert the designated remaining term into the necessary signals for subtraction. A separate output path appropriately modifies some or all of the signals generated by the feedback and combines the modified signals to form the output.

3,636,339

LIGHTING CASINGS

Edwin F. Osborne, Jr., Houston, Tex., assignor to Esquire, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 681,516, Nov. 8, 1967, now Patent No. 3,525,142. This application Mar. 26, 1970, Ser. No. 22,974
Int. Cl. F21p *5/00*
U.S. Cl. 240—3 **3 Claims**



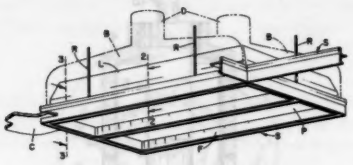
Lighting casings are provided, the individual panels of which are formed from a plurality of interlocking extruded metal sections. The sections are relatively long and narrow, and include a tongue along one longitudinal edge and a groove along the other. A plurality of individual sections form a composite panel, and the panel may be either planar or curved. The casings provided are economical and simple of construction and yet attractive in appearance.

3,636,340

AIR-HANDLING CEILING CHANNEL STRUCTURE

Gerard Edmund Mulvey, 36 Castle Frank Road, Toronto, Ontario, Canada

Filed Aug. 15, 1969, Ser. No. 850,454
Int. Cl. F21v *21/04;* F24f *13/06*
U.S. Cl. 240—9 R 7 Claims



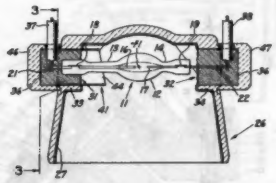
An air-handling channel structure for ceilings in which recessed channels are provided around lighting fixtures in the ceiling, and openings in the upper ends of the channels are connected to air delivery and return systems, each channel system being defined on one side by a ceiling support strut member, and on the other side by an inner frame member forming part of the lighting fixture, the strut and the frame members being formed separately, thereby enabling them to be provided with different finishes, and also enabling the ceiling and the strut members and the air-handling facilities to be erected and installed separately from the installation of the lighting fixtures. Locating means on the strut and frame members maintain those members in their desired spaced-apart positions.

3,636,341

LAMP AND HOUSING ASSEMBLY

Charles J. Miller, Bellevue, Ohio, assignor to General Electric Company

Filed Nov. 14, 1969, Ser. No. 876,708
Int. Cl. F21l *15/08*
U.S. Cl. 240—11.4 H 12 Claims



A heat-confining member is provided adjacent to a lead-seal portion of a lamp, and is positioned and proportioned so as to cause a sufficiently uniform temperature gradient at the seal to prevent the seal from cracking. The arrangement is particularly useful with arc tube lamps which operate at high temperatures.

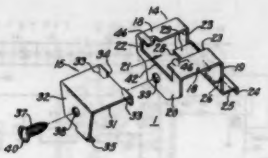
3,636,342

MOUNTING BRACKET FOR PHOTOGRAPHIC FLASHGUNS

Richard Blount, South Euclid, Ohio, assignor to General Electric Company

Filed Dec. 8, 1969, Ser. No. 882,961
Int. Cl. F21v *21/08;* E01c *5/00*
U.S. Cl. 240—52.1 10 Claims

A bracket for mounting a photographic flashgun on a camera is comprised of complementary front and back slidably interfitted members held together in assembled relation and clamped in place on the camera body by a fastening means.

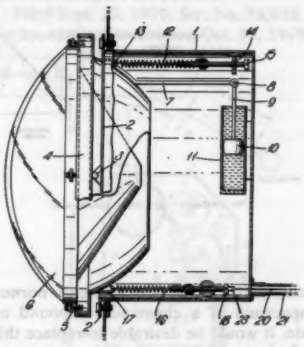


3,636,343

SELF-LEVELLING VEHICLE LAMPS

Frederick R. P. Martin, Bromley Kent, England, assignor to Martin Ward Developments Limited, London, England

Filed May 8, 1969, Ser. No. 822,978
Claims priority, application Great Britain, May 13, 1968, 22601/68; Feb. 21, 1969, 9618/69
Int. Cl. B60g *1/10*
U.S. Cl. 240—7.1 LJ 8 Claims



A self-levelling vehicle light system in which a control from the vehicle suspension provides a signal in accordance with changes in attitude of the vehicle relative to the road. A lamp support is tiltable about a horizontal pivotal axis in response to the signal, a resilient connection being provided both between the signal and the lamp support and the lamp support and a fixed mounting and a damper being provided for damping sudden movements of the lamp support.

3,636,344

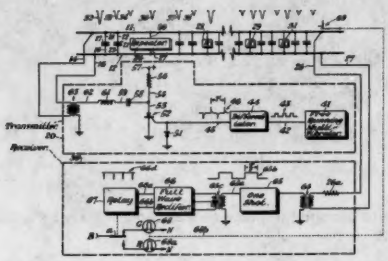
LONG LENGTH TRACK CIRCUIT

Richard D. Campbell, Harmarville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Dec. 15, 1969, Ser. No. 885,085
Int. Cl. B61l *21/06*
U.S. Cl. 246—40 6 Claims

This invention relates to a long length track circuit for electrically continuous tracks having a signal-transmitting end and a signal-receiving end which includes interposed therebetween at least one signal repeater coupled across the rails without interrupting the electrical continuity of the rails

of the track circuit to provide a repeated signal to the receiving end. The circuit further includes a plurality of capacitors



coupled across the rails to thereby decrease signal attenuation and thereby improve overall track circuit performance.

3,636,345

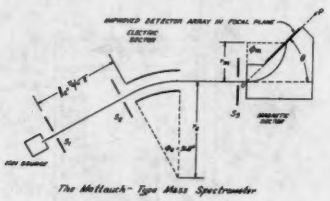
MASS SPECTROMETER DETECTOR ARRAYS

Joel Hirschel, 253 West 72nd St., New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 870,509

Int. Cl. H01j *39/34*

U.S. Cl. 250—41.9 D **12 Claims**



The Mattauch-Type Mass Spectrometer

The Mattauch-type mass spectrometer normally records the mass spectrum of a chemical compound on a photographic plate. It would be desirable to replace this plate with an array of electronic detectors whose outputs would be stored for computer analysis.

A new class of detector array configuration is proposed which matches the resolution of the array to the inherent resolution of the instrument. In so doing, a 64 percent saving in circuitry and data storage requirements is typically achieved when compared with the requirements of a uniform linear array which is capable of utilizing the full resolution of the instrument over the entire mass scale. This saving accrues when an array 25 cm. long is located in the focal plane of the instrument starting from a point 5 cm. from the mean ion entry point to the magnetic sector of the instrument.

3,636,346

ELECTRON BEAM GENERATOR FOR ELECTRON MICROSCOPE OR THE LIKE APPARATUS

Hiroshi Akahori, Katsuta; Yoshiro Ohnuma, Hitachi, and Morioki Kubozoe, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

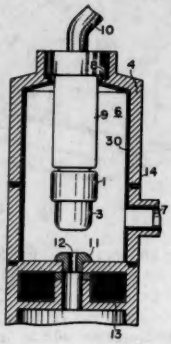
Filed Mar. 16, 1970, Ser. No. 19,682

Claims priority, application Japan, Mar. 17, 1968, 44/19593

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 A **6 Claims**

An electron beam generator for electron microscopes or the like apparatus comprising an electron gun, an anode placed in a position opposite to the electron gun, and an electron gun chamber containing therein the electron gun and the anode, wherein either an electrical insulation layer is formed on the inner surface of the electron gun chamber or a



cylinder of an electrically insulating material is provided to enclose the electron gun and the anode.

3,636,347

GONIOMETRIC APPARATUS FOR AN X-RAY DIFFRACTOMETER

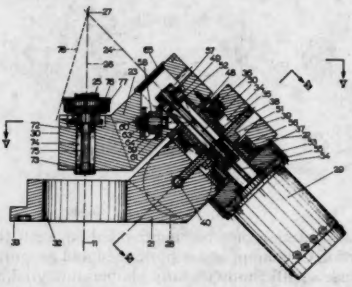
Simon Poot, Pijnacker, Netherlands, assignor to N.V. Verenigde Instrumentenfabrieken, Enraf-Nonius, Netherlands

Filed Dec. 8, 1969, Ser. No. 882,820

Claims priority, application Netherlands, Dec. 10, 1968, 6817709

Int. Cl. G01n *23/20*

U.S. Cl. 250—51.5 **12 Claims**



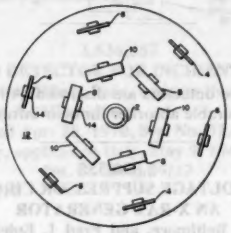
A goniostat for a diffractometer or an instrument of similar type which goniostat is rotatable about a first axis, the omega axis, and comprises a goniometer head rotatable about its central axis, the phi axis, which intersects the omega axis in the center of the instrument. The goniometer head is supported on one end of a supporting arm, which at its other end is mounted in the goniostat for rotation about a third axis, the kappa axis, which likewise intersects the omega and phi axes in the center of the instrument. The angles enclosed between the kappa axis and the omega axis and between the kappa axis and the phi axis, respectively, are equal and are in the range of 45°–60°.

3,636,348

METHOD OF TESTING POLYMER STABILIZERS

Jack P. Guillory, and Charles F. Cook, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Feb. 5, 1970, Ser. No. 8,980
Int. Cl. G01n *21/00, 23/00*
U.S. Cl. 250—52 6 Claims



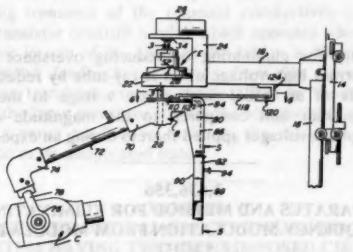
A method for isolating the ultraviolet-screening effects of a stabilizer in a stabilized polymer for testing other effects of said stabilizer on the polymer.

3,636,349

CONTINUOUS ORBIT PANOGRAPHIC X-RAY

Jack Herman Faude, Brooklyn, and Henry Hollman, Sea Cliff, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 27, 1970, Ser. No. 6,065
Int. Cl. G01n *21/00;* H01j *37/00*
U.S. Cl. 250—61.5 8 Claims



X-ray apparatus for taking panoramic radiographs of structures, such as teeth, arranged in an arcuate line without shifting the subject. The X-ray source and film carrier are mounted on a common support which is adapted to revolve about the subject while the axis of revolution is driven in an arcuate path located within and substantially concentric with the arch of the structures'curvilinear configuration.

3,636,350

THERMAL COPYING MACHINE

Harlan L. Krinke, May Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 2, 1970, Ser. No. 15,411
Int. Cl. G03b *41/00*
U.S. Cl. 250—65 T 10 Claims

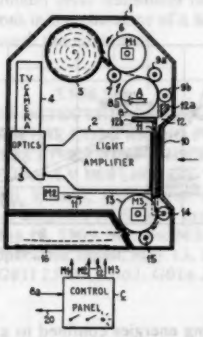
Exposure control is achieved in a simplified thermographic copy machine by adjusting the spacing of the radiation source with respect to the print roll while maintaining constant speed and constant radiation output.

3,636,351

COMBINED X-RAY FILM CHANGER AND X-RAY TRANSDUCER ASSEMBLY FOR DIAGNOSTIC APPARATUS

Pierre Lajus, Meudon, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Sept. 29, 1970, Ser. No. 76,418
Claims priority, application France, Oct. 10, 1969, 69/34687
Int. Cl. G03b *41/16*
U.S. Cl. 250—65 R 2 Claims



A film changer has a film supply portion with a roll of unexposed X-ray film therein, an exposure portion with movable image intensifying screens, leaving a gap therebetween, and an exposed film collecting and storage portion; behind the image intensifying screens lies the input screen of a picture amplifier tube. As desired, presentation of X-ray images on a TV monitor can be obtained or film fed by means of a separate motor connected to the supply reel between the intensifying screens; upon movement of the screens together, the film is cut off the roll, can be exposed by X-rays, and then, upon reopening, fed into the exposed film storage chamber by an independently driven ejection roller. Sequencing of operations and selection of mode (radiographic or radioscopic) is selectively controllable by a control console.

3,636,352

STRONTIUM PYROPHOSPHATE AS ADHESIVE IN LUMINESCENT SCREENS

Willem Lambertus Wanmaker, and Marinus Gerardus Antoine, both of Tak, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,473
Claims priority, application Netherlands, Dec. 4, 1968, 6817327
Int. Cl. H01j *1/62*
U.S. Cl. 250—80 **3 Claims**

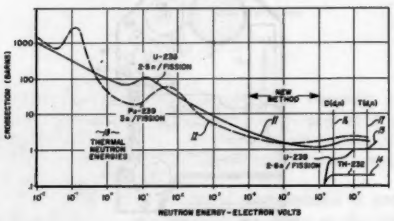
The invention relates to a luminescent screen including a luminescent calcium halophosphate phosphor using a strontium pyrophosphate adhesive layer provided on a transparent support. Furthermore the invention relates to a gas discharge lamp provided with such a luminescent screen.

3,636,353

METHOD AND APPARATUS FOR THE NONDESTRUCTIVE ASSAY OF BULK NUCLEAR REACTOR FUEL USING 1 KEV. TO 1 MEV. RANGE NEUTRONS

Samuel Untermyer, Los Altos, Calif., assignor to National Nuclear Corporation, Palo Alto, Calif.

Filed May 13, 1968, Ser. No. 728,463
Int. Cl. G01t *3/00, 3/02*
U.S. Cl. 250—83.1 **15 Claims**



Neutrons having energies confined to a range above thermal and below fast are used to interrogate bulk reactor fuel. Prompt and delayed neutron counting of the reaction products is used to obtain an assay of the valuable fissionable species content of the fuel.

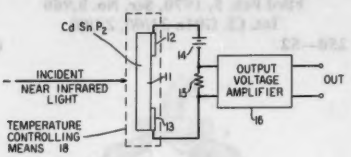
3,636,354

NEAR-INFRARED DETECTOR EMPLOYING CADMIUM TIN PHOSPHIDE

Robert Francis Leheny, Little Silver, and Joseph Leo Shay, Marlboro, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J.

Filed Mar. 23, 1970, Ser. No. 21,852
Int. Cl. G01j *5/28, 5/20*
U.S. Cl. 250—83.3 H **9 Claims**

There is disclosed a detector for near-infrared radiation employing a single crystal of cadmium tin phosphide, which is provided with electrodes and doped so that its effective bandgap at room temperature coincides in wavelength with the wavelength of the coherent light output of a neodymium ion solid-state laser. Photoconductive, PN junction-type, and



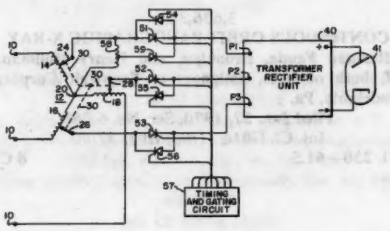
barrier-layer-type detectors are disclosed. A modified device is useful as a saturable absorber for near-infrared light.

3,636,355

STARTING VOLTAGE SUPPRESSOR CIRCUITRY FOR AN X-RAY GENERATOR

Jack L. James, Baltimore, and Fred J. Euler, Ellicott City, both of Md., assignors to CGR Medical Corporation, Cheverly, Md.

Filed Sept. 24, 1969, Ser. No. 860,686
Int. Cl. H05g *1/18, 1/32*
U.S. Cl. 250—102 **4 Claims**



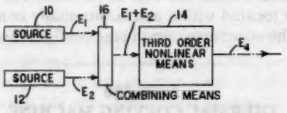
Circuitry for eliminating or reducing overshoot of the direct current high voltage of an X-ray tube by reducing the magnitude of an initial single-phase voltage to the transformer-rectifier unit compared to the magnitude of subsequent phase voltages applied thereto during an exposure.

3,636,356

APPARATUS AND METHOD FOR ELIMINATING FREQUENCY MODULATION FROM MODULATED LIGHT

Joseph A. Giordmaine, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J.

Filed Dec. 27, 1968, Ser. No. 787,516
Int. Cl. H04b *9/100*
U.S. Cl. 250—199 **24 Claims**



The proposed apparatus and method removes the frequency modulation from an incident light beam having an arbitrary combination of amplitude and frequency modulation, and produces a purely amplitude modulated beam with an envelope simply related to the envelope of the incident beam.

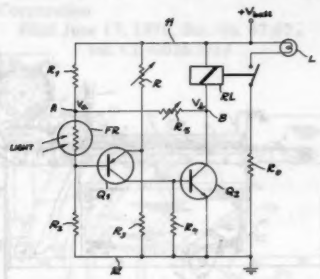
The apparatus comprises a third order nonlinear system for producing an output signal with amplitude proportional to the amplitude product of the square of the incident beam and a second purely sinusoidal local oscillator beam. This output beam contains the amplitude modulation information of the incident beam but does not contain any of the frequency modulation. The third order nonlinear system may include simply a single crystal such as strontium titanate or alternatively a more complex system of phase-matched difference and sum frequency generators.

3,636,357

THRESHOLD DETECTOR FOR INCIDENT RADIATION

Giorgio Del Zotto, Milan, Italy, assignor to Ates Componeti Elettronici S.p.A., Milan, Italy

Filed Apr. 28, 1970, Ser. No. 32,658
Claims priority, application Italy, May 9, 1969, 16618 A/69
Int. Cl. H01j *39/12*
U.S. Cl. 250—210 6 Claims



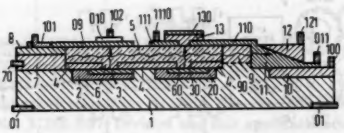
A resistance bridge, having one diagonal connected across a source of direct current, includes in its other diagonal the base/emitter circuit of an input transistor controlling a switching transistor of the opposite conductivity-type. The latter transistor controls a relay which operates when a photoresistor in one of the arms of the bridge is illuminated; a regenerative feedback connection from the output of the switching transistor exerts a toggle effect by modifying the bias of the input transistor to vary the sensitivity of the detector in a sense tending to maintain the relay in either its operated or its unoperated state.

3,636,358

INTEGRATED OPTICAL-ELECTRONIC SOLID-STATE SYSTEM HAVING TWO SUPERIMPOSED CIRCUIT PLANES LINKED BY OPTICAL AND/OR ELECTRONIC AND HORIZONTAL AND/OR VERTICAL CONNECTIONS

Eberhard Groschwitz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 26, 1969, Ser. No. 880,147
Claims priority, application Germany, Dec. 2, 1968, P 18 12 199.8
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J 38 Claims



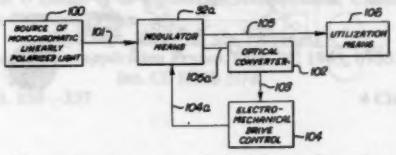
At least two superimposed circuit planes are linked by either optical or electronic and either horizontal or vertical connections for permitting in each of the circuit planes and between the circuit planes horizontal, vertical, optical and electronic communication operations via a matrix. The matrix functions at least partially as a carrier of electrical current paths and optical and electrical elements of the system and has vertical and horizontal recesses formed therein for permitting the penetration of information-carrying light beams in predetermined regions and in predetermined directions. At least one optically conductive member transfers light within and parallel to itself in any desired direction.

3,636,359

OPTICAL NONMECHANICAL FEEDBACK CONTROL OF ELLIPTICITY MODULATORS

Paige B. Hooper, Glendora, Calif., assignor to Cary Instruments, Monrovia, Calif.

Filed Apr. 13, 1967, Ser. No. 630,591
Int. Cl. G01j ; H01j *39/12*; G02f *1/26*
U.S. Cl. 250—217 4 Claims



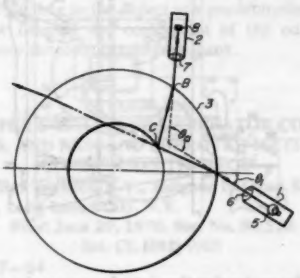
The invention concerns simplified automatic control of the peak birefringence of a modulator which is operable upon a linearly polarized beam of radiation to derive a modified beam having cyclically varying elliptical polarization. Simplified automatic compensation of the electrical drive signal applied to the modulator drive transducer functions solely in response to variations in the character of a beam of radiation that has passed through the modulator.

3,636,360

APPARATUS FOR DETECTION OF LIQUID LEVEL IN TRANSPARENT TUBE COMPRISING PHOTOCELL LOCATED TO RECEIVE LIGHT WHICH HAS BEEN TOTALLY REFLECTED

Asao Oishi; Takashi Yabuki, and Kazuo Moriguti, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1969, Ser. No. 823,747
Claims priority, application Japan, May 13, 1968, 43/32057
Int. Cl. G01f *23/00, 23/02*; G01n *21/46*
U.S. Cl. 250—218 5 Claims



A method for photoelectrically detecting a liquid level by projecting a light beam to a transparent tube communicating

with a pressure liquid tank and detecting the redirected light beam, utilizing the difference of relative refractivity at the inner wall of the tube when liquid fills the tube and when not, and the apparatus. Means for receiving the light beam redirected from the tube is so disposed as to receive the light beam only when the tube is empty, or the liquid is lower than the detector.

3,636,361

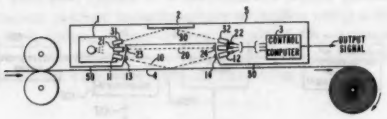
RADIATION-SENSITIVE GLOSSMETER WITH MEANS TO COMPENSATE FOR ENVIRONMENTAL CONTAMINANTS

Kenneth Bowers, 1075 Space Parkway, Space 53, Mountain View, Calif.

Continuation-in-part of application Ser. No. 811,769, Apr. 1, 1969, now abandoned. This application May 28, 1970, Ser. No. 41,559

Int. Cl. G01n *21/48*

U.S. Cl. 250—219 DF **7 Claims**



The gloss of material, such as paper, is measured by continuously comparing a first light beam reflected from the material both with a second light beam used to measure the effect of dirt and environmental contaminants on the intensity of the first light beam, and with a third light beam reflected from a gloss reference standard. Because a measure of the environmental contaminants is obtained by the second light beam, the output signal from the system gives solely the deviation of the gloss of the material from the reference gloss.

3,636,362

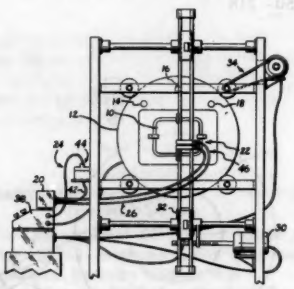
DEVICE FOR MEASURING HOLE SIZES

James F. Beeman, 1754 N. W. 61st Terrace, Gainesville, Fla.; Glenn H. Roberts, R.D. #1, Towanda, Pa., and Charles W. Smith, R.D. #2, Ulster, Pa.

Filed Aug. 14, 1970, Ser. No. 63,744

Int. Cl. G01n *21/30*

U.S. Cl. 250—219 FR **7 Claims**



A device for measuring the size of apertures in a thin metal sheet having a table that can rotate, preferably in a stepwise manner, and having the sheet to be measured and a standard sheet mounted over openings in the table. A light source is conducted to a movable head and a stationary head. Phototubes in registry with the heads provide two electrical currents, one that is generated from light which has not passed through the sheet and one generated from light that has passed through either the standard or the sheet to be measured. A means for comparing the two currents provides a highly accurate measurement of the hole sizes since the device compensates for changes in light source intensity due to external factors. The device is particularly suited for measuring the size of holes where a high degree of accuracy is required such as in television aperture masks, fine mesh screens and the like.

3,636,363

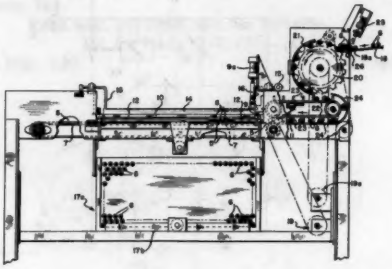
AUTOMATIC ACCUMULATOR FOR CIGARS

J. Harold Black, Quinton; Edward W. Reed, and Vernon C. Stant, both of Richmond, all of Va., assignors to American Brands, Inc., New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,523

Int. Cl. G06m *7/00*

U.S. Cl. 250—223 R **2 Claims**



An automatic accumulator for cigars comprises a conventional traveling belt which collects cigars sidewise in a single layer between the belt and a parallel spaced cover, a conventional rotating fluted drum which delivers the cigars sidewise to the collector from an irregular source of cigars, and a downwardly sloping ramp on which cigars from the source are charged sidewise to the drum, and a sensing device is positioned along the ramp so as to stop both the belt and the drum whenever there is less than a predetermined number of cigars on the ramp at one time.

3,636,364

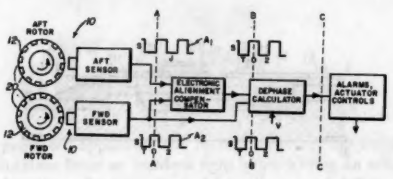
RADIATION SENSITIVE DESYNCHRONIZATION DETECTION SYSTEM

Samuel Stempler, Brooklyn; Carl A. Listl, New Hyde Park, and Leonard Baron, Syosset, all of N.Y., assignors to Kollsman Instrument Corporation, Syosset, N.Y.

Filed Sept. 19, 1969, Ser. No. 859,417

Int. Cl. H01j *39/12*

U.S. Cl. 250—220 R **5 Claims**



A method and apparatus for detecting the incidence of rotational desynchronization between a pair of rotating body

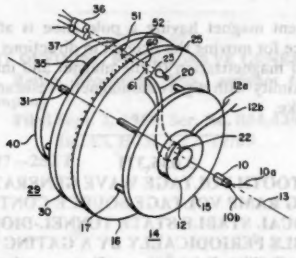
portions are disclosed herein. The apparatus includes an optical transmitter having an aperture for directing a beam of light energy at a rotating body portion. A modulator wheel assembly is rigidly connected to the rotating body for rotation therewith and positioned thereon to intercept and intermittently reflect the beam along a predetermined axis. A photosensor is located along the axis which is responsive to the intermittently reflected beam to provide a high-resolution pulse train having a frequency proportional to the rotational speed of the rotating body portion. A pulse train is produced in the above manner for each of the rotating body portions. Electronic circuitry is provided for comparing the phase of the pulse trains and an error signal is generated when the phase difference between the pulse train reaches a predetermined magnitude.

3,636,365

MECHANICAL RASTER SCANNER MEANS USING FIBER OPTICS FOR PATTERN RECOGNITION OR DISPLAY

George Porter Houston, Jr., Baltimore, Md., assignor to The Bendix Corporation

Filed June 17, 1970, Ser. No. 47,072
Int. Cl. G02b 5/14
U.S. Cl. 250—227 **13 Claims**



An image field centrally located on a stationary disk is comprised of layered coherent fiber sections of high-light transmissivity, each section extending from the image field to termination at the disk face equally spaced radial lines. A rotating disk concentric with the stationary disk and adjacent thereto includes an incoherent or coherent high-light transmissivity fiber section having a line input end generally skewed with respect to a radial so as to scan consecutively each element of each coherent section termination as the disks rotate relative to one another. The incoherent section terminates in a generally circular bundle centrally located on the rotating disk and is observed by a photocell through a light modulator.

In a second embodiment the mechanical raster scan means is used to reproduce on the image face a desired visual display by replacing the photocell with a constant light device and by means of the light modulator modulating the light which illuminates the circular bundle end in accordance with signals corresponding to the desired visual display. If these signals are properly synchronized with the rotation of the disk the desired visual display will be reproduced at the image face.

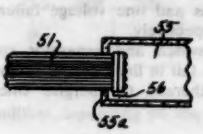
3,636,366

OPTO-ELECTRIC SCREENS PROVIDED WITH LIGHT-CONDUCTING MEMBERS

Edward Emanuel Sheldon, New York, N.Y.

Original application May 8, 1964, Ser. No. 366,038, now Patent No. 3,286,087. Divided and this application Sept. 22, 1966, Ser. No. 584,318
Int. Cl. G02b 5/14; H01j 39/00
U.S. Cl. 250—227 **16 Claims**

This invention relates to novel composite photoelectric screens characterized by the construction in which the supporting member for the photoelectric means is radiation transparent and is made of an array of said radiation-conducting fibers. The light-conducting fibers operate by the internal reflection and are arranged spatially in such a manner that they can transfer the radiation image across said support without any appreciable loss of resolution, contrast and brightness.

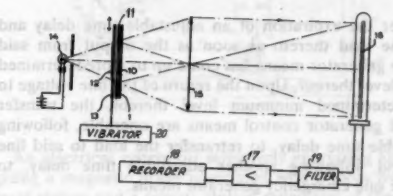


3,636,367

FOURIER TRANSFORM OPTICAL OBJECT ANALYZER

Andre J. Girard, Chatillon, France, assignor to Office National D'Etudes et de Recherches Aerospatiales, Chatillon-Sous-Bagneux, France

Filed Sept. 28, 1970, Ser. No. 76,027
Claims priority, application France, Sept. 30, 1969, 6933343
Int. Cl. H01b 5/18
U.S. Cl. 250—237 **4 Claims**



Fourier transform optical object analyzer comprising a plane support for an optical object to be analyzed, a mask formed with a slit registering with a line of the optical object and movable in a plane parallel to the object plane for line-by-line unmasking of the object and a grid including contiguous transparent and opaque zones bounded by curves in the form of equilateral hyperbolae. The mask is shifted step by step relatively to the optical object support and takes a plurality of discrete positions with regard to said object support. The grid is continuously shifted relatively to the mask for each position thereof and a photosensitive detector receives the light flux from the object which has passed through the slit and the grid. Means are provided for vibrating the grid relative to the object at a predetermined frequency, and for filtering the component of the output of the photosensitive detector at said frequency.

3,636,368

TRANSFER SWITCH AND GENERATOR CONTROL MEANS, AND NEW AND IMPROVED METHOD OF OPERATION THEREOF

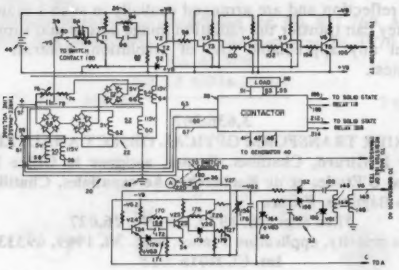
Joseph B. Sia, Yonkers, N.Y., assignor to Onan Eastern Corporation, Long Island City, N.Y.

Filed June 29, 1970, Ser. No. 50,522
Int. Cl. H02j 9/00
U.S. Cl. 307—64 **35 Claims**

New and improved transfer switch and generator control means are provided and take the form of a substantially solid state electronic circuit which comprises operatively associated line voltage sensor means, circuit operating signal generating means, timer means to provide a readily adjustable time delay prior to retransfer to normal line voltage,

timer means to provide a readily adjustable time delay prior to generator drive-engine shutdown, timer means to provide a readily adjustable time delay prior to generator drive-engine start, load transfer control means, retransfer to line voltage control means, readily adjustable generator output voltage sensor means and line voltage failure simulation test switch means, respectively.

The transfer switch and generator control means are operable, upon a fall in line voltage below a predetermined minimum level thereof, to energize emergency generator



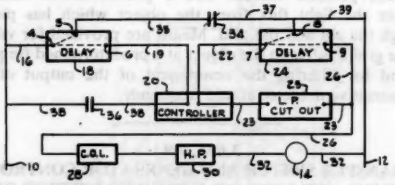
means after the expiration of an adjustable time delay and transfer the load thereto as soon as the output from said emergency generator means has come up to a predetermined minimum level thereof. Upon the return of the line voltage to said predetermined minimum level thereof, the transfer switch and generator control means are operable, following an adjustable time delay, to retransfer the load to said line voltage and, following another adjustable time delay, to deenergize said emergency generator means.

3,636,369

REFRIGERANT COMPRESSOR CONTROL-RELAY TO CONTROL TWO TIME DELAYS

Donald G. Harter, Scarsdale, N.Y., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,199
Int. Cl. F25b *1/00*
U.S. Cl. 307—141.4 **7 Claims**



An air conditioner refrigerant compressor control having a first time delay means automatically keeping the compressor deenergized for a predetermined period after each stop cycle, a second time delay means operable under certain conditions to keep the compressor energized for at least a predetermined period at initiation of each start cycle, and a single relay means operable to correctly program the two time delay means.

3,636,370

CONTACT-FREE PUSHBUTTON SWITCHING DEVICE

Konrad Samberger, Gailon; Ulrich Hruschka, and Karl Greger, both of Amberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 27, 1970, Ser. No. 23,375
Claims priority, application Germany, Mar. 29, 1969, P 19 16 336.1
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **8 Claims**

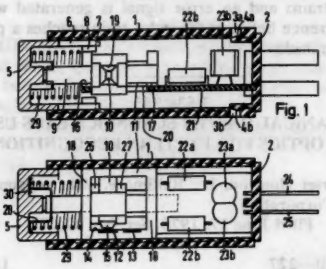


Fig. 1

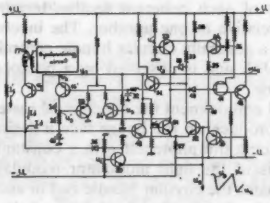
A permanent magnet having a pole shoe is affixed to a moving device for moving the magnet in directions transverse to the axis of magnetization of the magnet and into and out of close proximity with a galvanomagnetic resistance affixed to an iron yoke.

3,636,371

SAW-TOOTH VOLTAGE WAVE GENERATOR INCLUDING RAMP VOLTAGE SOURCE CONTROLLED BY DUAL STABLE STATE TUNNEL-DIODE SWITCHABLE PERIODICALLY BY A GATING CIRCUIT

Jean Georges Quillier, Saint-Etienne, France, assignor to Constructions Radioelectriques et Electroniques du Centre, Saint-Etienne (Loire), France

Filed Aug. 13, 1969, Ser. No. 849,755
Claims priority, application France, Aug. 14, 1968, 162982
Int. Cl. H03k *4/50, 4/56*
U.S. Cl. 307—228 **6 Claims**

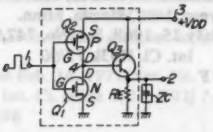


A saw-tooth wave voltage generator comprises an integrator formed by a capacitor charged by means of an invariable current associated with a stable two-state tunnel-diode triggering circuit. One of the states of the diode controls return of the saw-tooth wave voltage to a starting reference level by means of a control amplifier which includes a comparator stage to which is applied the reference voltage and the output voltage of the generator, and the other state of the tunnel-diode releases operation of the generator. A second control amplifier interconnected with the first one and which takes its input voltage from the comparator stage of the latter functions to detect arrival of the saw-tooth wave voltage near the value of the reference voltage and applies it to the triggering circuit to control the biasing of the tunnel diode.

3,636,372
SEMICONDUCTOR SWITCHING CIRCUITS AND INTEGRATED DEVICES THEREOF

Minoru Hujita; Minoru Nagata, both of Kodaira-shi, and Seiji Kubo, Kokubunji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1968, Ser. No. 780,690
Claims priority, application Japan, Dec. 6, 1967, 42/77974
Int. Cl. H03k 17/60
U.S. Cl. 307—251 4 Claims

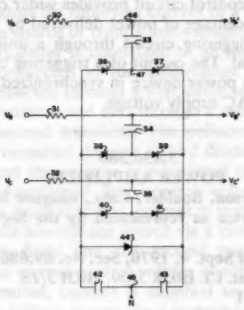


A switching circuit with small consuming power and high-switching speed, in which a bipolar transistor and a resistor are connected in the emitter follower configuration to the output terminal of insulated gate-type field effect transistors in complementary connection.

3,636,373
LIMIT DEFINING FIRING WAVE GENERATOR

Charles E. Rettig, Brookfield, Wis., assignor to The Louis Allis Company

Filed Sept. 2, 1969, Ser. No. 854,429
Int. Cl. H03k 1.12, 17/00
U.S. Cl. 307—252 P 9 Claims



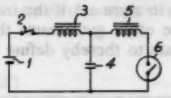
A firing wave generator for a phase controlled rectifier which generates a square wave in addition to a cosine wave. The square wave is added to the cosine wave to provide a firing wave with the end points defined by the sides of the square wave to insure coincidence of the firing wave with the direct voltage command of the phase controlled rectifier.

3,636,374
NONLINEAR CIRCUIT DEVICE

Seiji Sumi, and Isao Kaneda, both of Otsu, Japan, assignors to New Nippon Electric Company Ltd., Osaka, Japan

Filed Feb. 26, 1970, Ser. No. 14,324
Claims priority, application Japan, Sept. 10, 1969, 44/71845
Int. Cl. H03k 3/00
U.S. Cl. 307—106 19 Claims

A nonlinear circuit consisting of first and second circuits. The first circuit comprises a power source, an inductance element L_1 and a capacitance element C connected in an oscillating arrangement. The second closed circuit comprises said capacitance element, an inductance element L_2 and a voltage responsive switching element. The second closed circuit is controlled for operation under either oscillating or

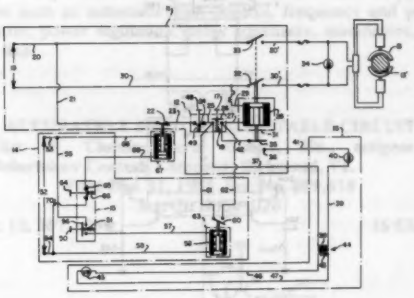


nonoscillating condition depending on the necessary output voltage.

3,636,375
MAGNETIC LOOM-BRAKING DEVICE

Stanley E. Armstrong, 143 Nassau Ave., Kenmore, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,691
Int. Cl. H01h 47/00
U.S. Cl. 307—114 9 Claims

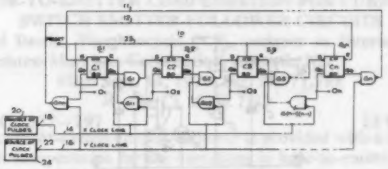


An electrical system for selectively energizing and deenergizing a magnetic brake associated with a loom from both a local station and a remote station regardless of the station at which the previous energization or deenergization occurred, and including a high-voltage primary circuit containing such local station for locally energizing and deenergizing the brake, and a low-voltage secondary circuit which is electrically insulated from the primary circuit and contains such remote station for remotely energizing and deenergizing the brake. A pilot circuit in the primary circuit includes pilot lamps at the local and remote stations and at the production maintenance department to indicate that the loom brake has been energized.

3,636,376
LOGIC NETWORK WITH A LOW-POWER SHIFT REGISTER

Kurt Hoffmann, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Long Island, N.Y.

Filed May 1, 1969, Ser. No. 821,019
Int. Cl. H03k 17/00; G11c 19/00
U.S. Cl. 307—221 B 15 Claims



A low-power binary shift register in which power consumption is a function of the binary content rather than the number of stages. Each stage includes a pair of transistors

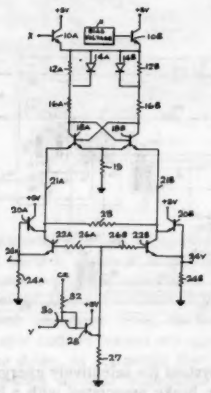
which are either in saturated conduction, representing a binary 1, or in a cutoff state of conduction, representing a binary 0. Two clockable gates are also included in each stage. One of these gates switches the transistors of an adjacent stage to conduction to store a 1 if the transistors of its stage store a 1, while the other gate resets the transistors of its stage to a cutoff state to thereby define the storing of a binary 0.

3,636,377

BIPOLAR SEMICONDUCTOR RANDOM ACCESS MEMORY

Panayotis C. Economopoulos, Scottsdale, and Thomas W. Hart, Jr., Phoenix, both of Ariz., assignors to Semi-Conductor Electronic Memories Incorporated, Phoenix, Ariz.

Filed July 21, 1970, Ser. No. 56,778
Int. Cl. G11c *11/36*; H03k *3/286*
U.S. Cl. 307—238 **20 Claims**



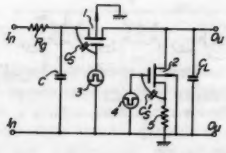
A bipolar semiconductor random access memory (RAM) cell is provided, suitable for use in the form of memory arrays fabricated as an integrated circuit. The storage transistors employed are well isolated from the addressing portion of the circuitry so as not to be affected thereby. The cell operates in three modes of power dissipation comprising very low power when it is in the unselected mode, slightly higher power when half selected, and the highest power dissipation when in the fully selected mode.

3,636,378

SERIES-SHUNT-TYPE SEMICONDUCTOR SWITCHING CIRCUIT

Shin-Ichi Chashi, Kodaira-shi, and Hiroshi Nomoto, Hachioji-shi, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Aug. 7, 1969, Ser. No. 848,262
Claims priority, application Japan, Aug. 9, 1968, 43/56150
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **9 Claims**



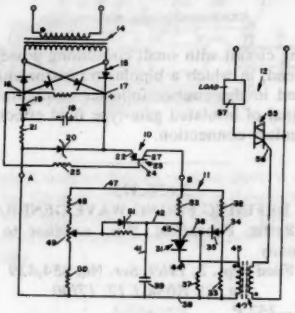
A series-shunt-type semiconductor switching circuit in which at least one impedance element is provided in an electrical path consisting of a connection point of a capacitance element across the input terminals and the signal applied to one of the input terminals of the switching circuit, two switching elements connected in a series-shunt fashion and excited alternately to ON and OFF states and a common terminal. By this construction spike noise and offset voltages heretofore encountered with the conventional switching device can be removed.

3,636,379

PHASE CONTROL

John L. Moe, and Charles H. Russell, both of Winona, Minn., assignors to Waynco, Inc., Winona, Minn.

Filed July 25, 1968, Ser. No. 747,744
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 F **1 Claim**



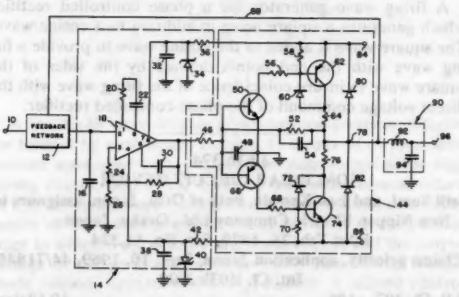
A novel phase control circuit provides wider control range and a greater percentage of power delivered by synchronous switching of a triggering circuit through a unique notched square wave signal. The output of a triggering circuit is then used to actuate a power device in synchronized phased relationship with an AC supply voltage.

3,636,380

POWER AMPLIFIER

Vernon A. Anderson, Boulder, Colo., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 4, 1970, Ser. No. 69,680
Int. Cl. H03k *5/00*; H03f *3/18*
U.S. Cl. 307—261 **2 Claims**



An amplifier using a Schmitt trigger. When the amplifier provides a positive signal the input to the Schmitt trigger in-

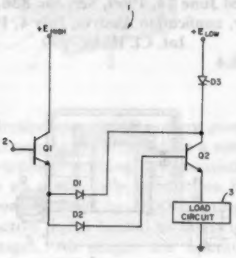
creases due to a feedback network. When the input signal becomes more positive than the voltage at the noninverting terminal, the Schmitt trigger reverses state and supplies a negative output. When the input, due to the feedback network, is more negative than the voltage at the noninverting terminal, the Schmitt trigger once again reverses state. An inductor and a capacitor function as a low-pass filter at the output.

3,636,381

TRANSISTORIZED LOAD CONTROL CIRCUIT COMPRISING HIGH- AND LOW-PARALLEL VOLTAGE SOURCES

Meyer Press, Sharon, Mass., assignor to GTE Sylvania Incorporated

Filed Feb. 16, 1971, Ser. No. 115,529
Int. Cl. H03k *1/02*; H02j *1/10*
U.S. Cl. 307—296 **6 Claims**



A transistorized load control circuit including first and second transistors for supplying current to a load circuit from a high-voltage source or from a low-voltage source. The base of the first transistor is connected to an input terminal, the collector is connected to the high-voltage source, and the emitter is connected through a first diode to the collector of the second transistor and also through a second diode to the base of the second transistor. The collector of the second transistor is connected through a third diode to the low-voltage source and the emitter is connected to a load circuit. When a predetermined first control voltage condition is present at the input terminal, current is supplied to the load circuit from the low-voltage source via a current path including the third diode and the second transistor. When a predetermined second control voltage condition is present at the input terminal, current is supplied to the load circuit from the high-voltage source via a current path including the first transistor, the first diode, and the base-emitter circuit of the second transistor and also via a current path including the second diode. During operation of the load control circuit, the base-emitter circuit of the second transistor is prevented from receiving and conducting excessive values of current.

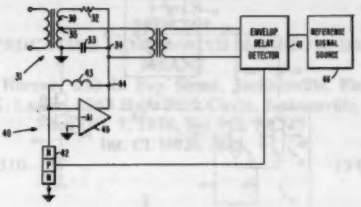
3,636,382

AUTOMATIC DELAY EQUALIZER

William G. Crouse, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 665,074, Sept. 1, 1967, Pat. No. 3,539,826
Filed Mar. 9, 1970, Ser. No. 17,651
Int. Cl. H03k *1/12*
U.S. Cl. 307—262 **3 Claims**

An inverting amplifier includes a shunt feedback impedance element connected between its input and output terminals. The feedback current is divided between a series input resistance R*in* and an impedance R*s* shunting R*in*. Either R*s* or R*in* is in the form of a variable impedance semiconductor device and a suitable source of control signals is applied to the semiconductor device to cause it to have a variable impedance. This variable impedance causes the output impedance *Zo* of the amplifier to vary as a function of the input control signals to the semiconductor device. The output impedance is resistive, capacitive, inductive, or the



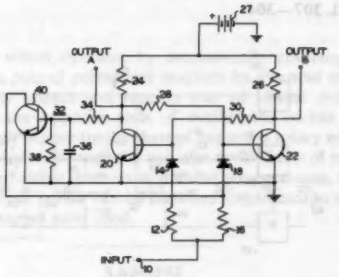
like, depending upon the nature of the feedback impedance of the amplifier; and the device is useful in varied applications such as automatic gain control, frequency and phase control, power regulation, delay equalizers, modulators, and the like.

3,636,383

ACCURATELY SWITCHING BISTABLE CIRCUIT

Walter W. Clubbe, Coral Gables, Fla., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 31, 1969, Ser. No. 889,618
Int. Cl. H03k *3/26*
U.S. Cl. 307—291 **16 Claims**



A bistable circuit including an input steering gate having first and second branches for alternately applying input signals to respective sides of the bistable circuit, and an RC delayed transistor operative to disable one branch of the steering gate for a preselected time interval sufficient to permit complete switching of the circuit in response to slow rise time input pulses.

3,636,384

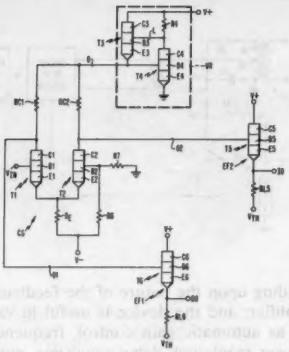
BASE-TO-EMITTER COMPENSATION FOR CURRENT SWITCH EMITTER-FOLLOWER CIRCUITS

David Dewitt, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,715
Int. Cl. H03k *1/12*
U.S. Cl. 307—297 **13 Claims**

A current-switch emitter-follower is provided with a circuit which compensates for the variations in base-to-emitter voltage due to variations in temperature. The circuit comprises a regulated power supply which maintains its output at a predetermined level with respect to a reference potential such as ground. The power supply includes a transistor hav-

ing its emitter at said reference potential. The base of this transistor is connected to the power supply output terminal which is therefore maintained at a predetermined level, the base-to-emitter voltage, with respect to said ground reference



potential. The base-to-emitter voltage of this transistor tracks the base-to-emitter voltage of the emitter-follower circuits so as to compensate for the variations in the latter.

3,636,385

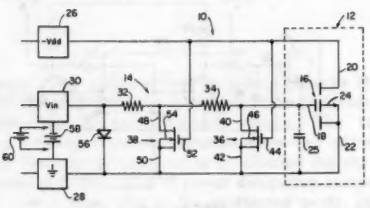
PROTECTION CIRCUIT

Ronald L. Koepp, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 13, 1970, Ser. No. 11,181

Int. Cl. H03k *17/60*

U.S. Cl. 307—304 **7 Claims**



A protection circuit is disclosed for protecting a P-channel enhancement-type metal oxide semiconductor transistor from rupturing due to static voltage building up between its gate and source electrodes. The protection circuit includes at least one N-channel depletion-type transistor having its drain and source electrodes connected between the gate and source electrodes of the enhancement-type transistor and its gate electrode coupled to a negative power supply terminal. A resistor is also included between the gate of the enhancement-type transistor and the terminal to which an input signal is applied. There is also included a diode, in shunt with the resistor and the depletion-type transistor, which is poled to be reverse biased by the input signal.

3,636,386

HIGH-VOLTAGE SOURCE DEVICES UTILIZING PIEZOELECTRIC ELEMENTS

Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Limited, Ohota-ku, Tokyo, Japan

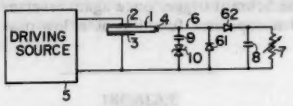
Filed May 4, 1970, Ser. No. 34,157

Claims priority, application Japan, May 8, 1969, 44/42113

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **4 Claims**

In a high-voltage source device comprising a piezoelectric element including a driving electrode and an output electrode, a driving source for applying a driving voltage to the driving electrode and a rectifier circuit connected to the output electrode to supply a high DC voltage to a load, there are provided a constant voltage element connected to the output



electrode in parallel with the rectifier circuit to shunt the increments of the output from the piezoelectric element thus providing a constant output voltage.

3,636,387

PIEZOELECTRIC ACCELEROMETER

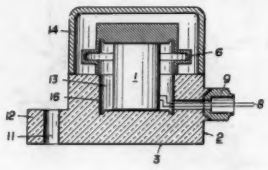
Rudolf A. Hatschek, Fribourg, Switzerland, assignor to Vibro-Meter AG, Fribourg, Moncor, Switzerland

Filed June 24, 1969, Ser. No. 836,098

Claims priority, application Austria, July 4, 1968, A 6402/68

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.4 **5 Claims**



A piezoelectric accelerometer in which a measuring element is mounted in a housing of ceramic material with a part adapted to rest on the object to be measured to achieve a high degree of heat resistance together with heat insulation and good transfer of mechanical oscillations.

3,636,388

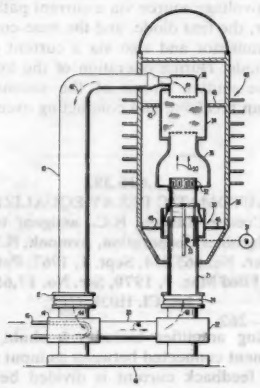
ELECTROHYDRODYNAMIC GENERATOR WITH COLLECTOR EXTENSION

Philip E. Secker, Anglesey, North Wales, and John F. Hughes, Boulder, Colo., assignors to KDI Corporation

Filed June 25, 1970, Ser. No. 49,723

Int. Cl. H02m *3/00*

U.S. Cl. 310—10 **4 Claims**



In an electrohydrodynamic generator, a collector extension covers the collector/injector interspace region and prevents

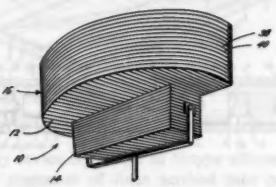
radial dispersion of charge carriers. The collector extension is tubular leaving the main body of the collector and opens into a wide mouth at the top of the injector assembly. The mouth is even with or extends past the top of the injector assembly.

3,636,389

MAGNETOHYDRODYNAMIC METHOD AND SYSTEM

Michael Petrick, Joliet, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 22, 1971, Ser. No. 126,711
Int. Cl. H02m 4/02
U.S. Cl. 310—11 5 Claims



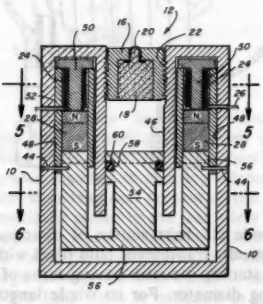
A magnetohydrodynamic (MHD) power plant containing a plurality of MHD generators arranged in a number of stages operates on a two-phase working fluid consisting of an inert gas dispersed in an electrically conductive liquid. Heat is added to the working fluid by reconstituting the working fluid with conductive liquid heated to the original temperature between stages. All stages are operated essentially isothermally, the last MHD generator being operated under conditions such that vapors of the conductive liquid present in the working fluid are condensed therein. The gas phase from the last MHD generator is cooled by regenerative heat exchange and recompressed prior to being returned to the heat source. Also, each MHD generator is surrounded by a separate magnetic field which is separately adjustable to minimize the velocity difference between phases as the working fluid passes through the MHD generator.

3,636,390

EXPLOSIVE PULSE GENERATOR

Bob E. Stauder, and William O. Christianson, both of Tulsa, Okla., assignors to Dorsett Electronics, A Division of La Barge, Inc., Tulsa, Okla.

Filed Jan. 26, 1970, Ser. No. 5,629
Int. Cl. H02k 35/02
U.S. Cl. 310—14 2 Claims



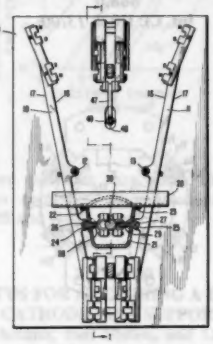
This invention relates to a power supply for generating an electrical pulse. More particularly, the invention is a power supply for generating an electrical pulse including a housing, a coil of wire supported by the housing, a magnetic member supported by the housing and removable relative to the coil, and an explosive element having an igniter cap which, when physically distorted, ignites the explosive element, the explosive element being carried by the body and arranged to move the magnetic member by explosive force to induce a voltage pulse in the coil.

3,636,391

RECIPROCATING MOTOR WITH MAGNETIC DRIVE MEANS

Jack E. Horner, 233 E. Bay Street, Jacksonville, Fla., and Jack K. Lanier, 5863 Hyde Park Circle, Jacksonville, Fla.

Filed Oct. 7, 1970, Ser. No. 78,747
Int. Cl. H02k 7/06
U.S. Cl. 310—24 13 Claims



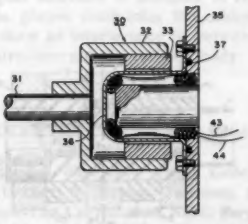
A motor which operates by mechanically reversing the polarity of a pair of permanent magnets by solenoid means, to alternately attract and repel a pair of similar magnets disposed at the opposite ends of oscillatable rocker arms which through proper timing thereof imparts a rotary motion to a power shaft. Through the use of a multiplicity of rocker arms disposed either in series or parallel arrangements, an increase in output power can be obtained in proportion to the number of magnet pairs used.

3,636,392

ELECTRICAL GENERATOR HAVING NONSALIENT POLES FOR METERING SHAFT ROTATION

Paul W. Gerry, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 16, 1969, Ser. No. 866,850
Int. Cl. H02k 7/00
U.S. Cl. 310—67 3 Claims



A cup-shaped member is attached to a rotating shaft as might be associated with a turbine meter for measuring fluid

flow or volume. A permanent magnet ring is mounted internal to the cup member, the ring having a plurality of equispaced alternating north and south poles. A second cup-shaped member is mounted within the permanent magnet ring having a plurality of coils mounted on an iron core therein having nonsalient poles to maintain uniform reluctance in the magnetic circuit regardless of the angular position of the shaft.

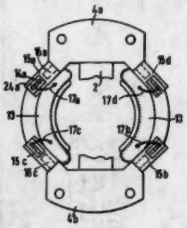
In an alternative embodiment, the ring is iron, having the coils mounted thereon, and the permanent magnet is made to rotate in the center portion of the ring.

3,636,393

COUPLING COMPONENTS FOR ELECTRIC MACHINE

Wolfgang Pieper, Wurzburg, Germany, assignor to Siemens Aktiengesellschaft

Filed Feb. 26, 1970, Ser. No. 14,435
Claims priority, application Germany, Mar. 4, 1969, P 19 10 868.0
Int. Cl. H02k *13/00*
U.S. Cl. 310—71 **9 Claims**



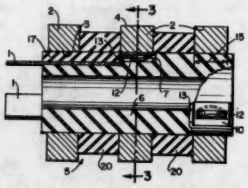
An electric machine has a rotor, bearing plates for the rotor, a stack of stator laminations affixed to the bearing plates and a winding mounted on the stator laminations. Each of a plurality of insulating members is mounted on a corresponding one of a plurality of attachments and recesses for holding the insulating members. Each of a plurality of socket connections is mounted on a corresponding one of the insulating members. Electrically conductive means are electrically connected at one end to each of the socket connections and are adapted to be connected at the other end of each to a component of the machine.

3,636,394

ELASTIC CONTACTS FOR CARBON COLLECTOR RINGS HAVING INSULATING BODIES IN ELECTRIC MOTORS

Walter Forste, Suhl/Thuringia; Joachim Schreiber, Leipzig, and Hans Stark, Suhl/Thuringia, all of Germany, assignors to VEB Elektrogeratewerk Suhl, Suhl/Thuringia, Germany

Filed May 18, 1970, Ser. No. 38,438
Int. Cl. H02k *13/02*
U.S. Cl. 310—232 **12 Claims**



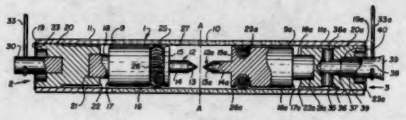
Contacts for carbon collector ring assemblies in electric motors, having a centrally disposed insulating boss and a plurality of contact laminae or flags, inserted between the insulating bodies of the assemblies and the boss, corresponding in their number to that of the collector rings, the laminae being inserted under pressure within the rings and having specially shaped portions both to adapt to the curvature on the inside surface of the rings and to the insulating pieces in the assembly.

3,636,395

LIGHT SOURCE

Nathan M. Banes, Jr., and James H. Bottcher, both of Gainesville, Fla., assignors to Sperry Rand Corporation

Filed Feb. 19, 1970, Ser. No. 12,655
Int. Cl. H01j *61/98*
U.S. Cl. 313—8 **8 Claims**



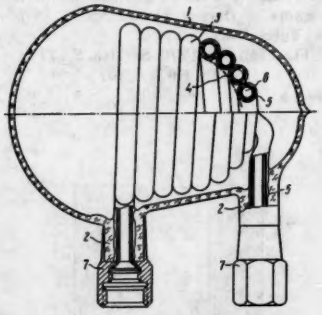
A compact, short arc, high-pressure, xenon-filled light source provides high-intensity radiation with reliability and tolerance of severe environments. Specially shaped thoriated tungsten electrodes are fixed in opposed relation to nickel support blocks welded within a composite, uniform diameter, cylindrical envelope portion formed of a tube of alumina ceramic sealed to nickel-iron-cobalt alloy sleeves.

3,636,396

NONELECTRODE RF LIGHT SOURCE

Valentin Anatolievich Gruzdev, korpus 338 "B," kv. 37; Boris Vasilievich Skvortsov, korpus 308, kv. 25; Nikolai Vasilievich Propkopenko, korpus 445, kv. 215, and Evgeny Alexandrovich Nedzvetsky, korpus 329, kv. 69, all of Zelenograd Moskovskoi Oblasti, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,721
Int. Cl. H01j *1/02, 7/26*
U.S. Cl. 313—31 **2 Claims**



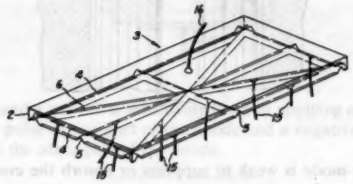
A nonelectrode RF light source of directional radiation which is an optically transparent bulb filled with a discharge gas, holding a starting inductor having turns of a monotonically decreasing diameter. For its whole length and shape, the inductor is enclosed in an insulating tube whose inner surface has a coating acting as an optical reflector.

The said light source produces a discharge with luminous and spectral characteristics constant with time and uniform in spatial distribution.

3,636,397
SINGLE-CRYSTAL SILICON CARBIDE DISPLAY DEVICE

Arrigo Addamiano, Willoughby, and Ronald J. Perusek, Chardon, both of Ohio, assignors to General Electric Company

Filed Apr. 10, 1969, Ser. No. 815,047
Int. Cl. H05b *33/16;* H01k *7/04*
U.S. Cl. 313—108 8 Claims

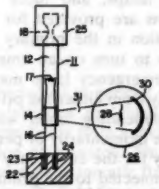


The display device is a wafer of N-type silicon carbide having lines or segments of lines scribed into one face in a selected design such as an alpha-numeric or a grid of closely spaced dots. After scribing, the wafer is diffused with P-type dopants such as boron and aluminum. Contact to the P-type material within the scribed lines is made by vacuum evaporation of copper-silver. The wafer faces are then lapped to remove the metallizing and P-type layer except within the scribed lines. A connection is then made to the N-type material, and individual connections to each P-type scribed-line segment. By selective energization of line segments, various luminous letters, numerals or characters may be formed which are seen through the N-type material.

3,636,398
SUBMINIATURE ELECTRIC LAMP HAVING A COMPOSITE ENVELOPE

Walter A. Boyce, Glen Ridge, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,663
Int. Cl. H01j *5/00, 61/40;* H01k *1/28*
U.S. Cl. 313—317 5 Claims

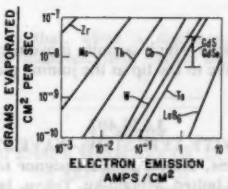


The lamp, which may be of the incandescent or photoflash-type, has an envelope composed of segments of light-transmitting and infrared-radiation absorbing glass tubing that are sealed together in abutting relationship. The infrared-radiation absorbing end portion of the composite envelope is hermetically sealed to the lead wires and the seal is formed by focusing a beam of infrared radiation on the seal assembly. The envelope is evacuated, and filled with gas if desired, through its opposite end which is then tipped off. Oxidation of the lead wires is reduced to a minimum by forming the seal inside a chamber that is evacuated, or filled with an inert gas, and has walls which transmit infrared radiation. In the case of chamber sealing, the free end of the light-transmitting portion of the envelope is sealed before the envelope-mount assembly is placed into the chamber so that the sealing and evacuation (or gas filling) operations are performed simultaneously.

3,636,399
RARE EARTH CHALCOGENIDE THERMIONIC EMISSION CATHODES

Dean E. Eastman, Route 3, Putnam Valley, N.Y.; Frederick Holtzberg, Cradle Rock Road, Pound Ridge, N.Y., and Siegfried I. Methfessel, Hustadtring 24, Bochum 463 W., Germany

Filed Oct. 21, 1970, Ser. No. 82,659
Int. Cl. H01j *1/14, 19/06*
U.S. Cl. 313—346 9 Claims

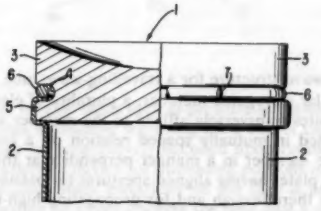


This disclosure provides rare earth chalcogenide thermionic emission cathodes. Illustrative examples of such cathodes are GdS and GdSe films.

3,636,400
APPARATUS FOR ATTACHING A DISPENSER CATHODE TO A SUPPORT

Charles A. Duchmann, San Mateo, and George V. Miram, Daly City, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed July 22, 1969, Ser. No. 843,570
Int. Cl. H01j *1/14*
U.S. Cl. 313—346 R 4 Claims



Method and apparatus for attaching a dispenser cathode to a support structure is disclosed. The dispenser cathode body includes a peripherally directed groove into which the end of a tubular support structure is crimped. A retaining wire is forced into the groove containing the crimped end of the support to produce an interference fit between the retaining wire, support structure and the cathode body.

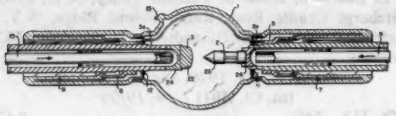
3,636,401
LIQUID-COOLED ELECTRODE FOR HIGH-PRESSURE COMPACT ARC

Salvatore Cortorillo, West New York; George A. Shaffer, Union, and Herbert S. Strauss, Paramus, all of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Filed Dec. 22, 1969, Ser. No. 887,274
Int. Cl. H01j *1/02*
U.S. Cl. 313—352 11 Claims

Anode and cathode electrodes for arc discharge lamps comprising an electrode holder, a tip and a joining piece of

high-heat conductivity material which are cast to form a complete electrode without the need for brazing. The casting apparatus includes a mold for holding the electrode holder,



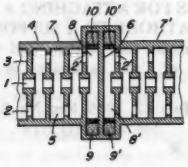
tip and joining piece which permits movement of the electrode holder relative to the tip as the joining piece is heated.

3,636,402

COUPLED CAVITY-TYPE SLOW-WAVE STRUCTURE

Toshinori Horigome, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 66,041
Claims priority, application Japan, Aug. 30, 1969, 44/68987
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.6 **6 Claims**



A slow-wave structure for a travelling-wave tube, comprising a tubular waveguide member, a plurality of electric conductive plates transversely affixed to the member and coaxially disposed in mutually spaced relation on a longitudinal axis of the member in a manner perpendicular thereto, the respective plates having aligned apertures for passing an electron beam therethrough and for propagating high-frequency energy in a state of electromagnetic interaction with the electron beam, and an attenuation section disposed substantially in the middle of the member and including two vessels disposed coaxially with the member longitudinal axis at juxtaposed ends of input and output sides of the member, at least a part of each of the vessels being made of high-frequency energy-permeable material, and water substantially filling the respective two vessels, whereby the high-frequency energy is attenuated in the respective vessels while the water therein serves as a coolant therefor.

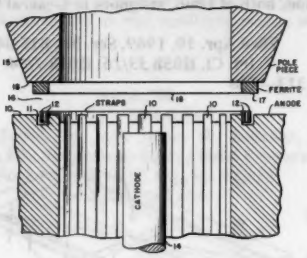
3,636,403

FERRITE MODE SUPPRESSOR FOR MAGNETRONS

Robert E. Edwards, Lexington, and John M. Osepchuk, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 9, 1970, Ser. No. 70,707
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.51 **4 Claims**

A ferrite mode suppressor for magnetrons having a ferrite annular member affixed in a region of a magnetron cavity where the radiofrequency magnetic field of a competing mode is strong and where the radiofrequency magnetic field



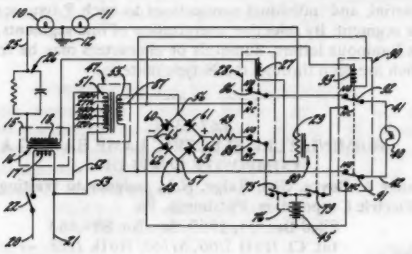
of the π-mode is weak to suppress or absorb the competing mode or modes.

3,636,404

EMERGENCY LIGHT CIRCUIT FOR MERCURY VAPOR LAMPS

Arthur I. Appleton, 1713 West Wellington Ave., Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,113
Int. Cl. H05b *41/46*
U.S. Cl. 315—87 **13 Claims**



An auxiliary or emergency lighting system for use with electric discharge lamps, and more particularly mercury vapor lamps. Means are provided for detecting the loss of energy or illumination in the primary discharge lamps and responding thereto to turn on an emergency lamp. In one embodiment, the emergency lamp may be selectively supplied with electricity from either the primary power source or from a battery, depending upon whether the electrical discharge lamps are momentarily or permanently deprived of energy. The battery for the emergency lamp is charged by a charging circuit connected to the primary power source and operative during normal operation of the electrical discharge lamp. A second embodiment uses a light-detecting device for triggering the emergency lamp into operation and includes means for providing both a fast charge and a trickle charge to the battery, depending upon the charge state of the battery.

3,636,405

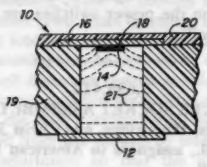
SPLIT ELECTRODE GAS CELL

William L. Cotter, Beverly, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 1, 1969, Ser. No. 862,866
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 R **5 Claims**

A system for selectively firing one bistable gas cell in a matrix of bistable gas cells forming a display or data storage

system. A voltage is applied across the gas cell which is sufficient to sustain a discharge in the gas cell but insufficient to fire the gas cell. Each gas cell within the matrix has a split



anode, and a gas cell is selectively fired by applying a positive voltage pulse to one part of the anode and a negative voltage pulse to the other part of the anode.

3,636,406

ELECTRONIC FLASH UNIT

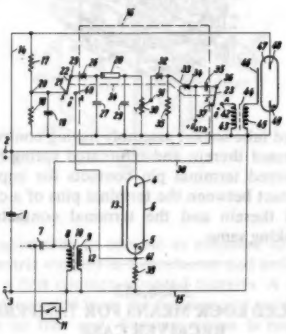
Karl Ackermann, Berlin, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed Dec. 15, 1969, Ser. No. 884,794

Claims priority, application Germany, Apr. 19, 1969, P 19 20 036.3

Int. Cl. H05b *41/00*

U.S. Cl. 315—241 **10 Claims**



A quench tube is connected in parallel with the flash tube. A control signal for initiating the flash or the quenching operation is derived selectively from a measuring and control circuit by the operation of a switch. Thus the unit may be used alternatively to provide automatic flash control or to initiate the flash in response to light from another flash unit.

3,636,407

GAS-DISCHARGE DEVICE WITH MAGNETIC MEANS FOR EXTINGUISHING THE DISCHARGE

Basil Offor Baker, Rickmansworth, England, assignor to The M-O Valve Company Limited, London, England

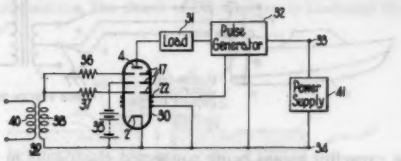
Filed July 15, 1970, Ser. No. 55,142

Claims priority, application Great Britain, July 15, 1969, 35683/69

Int. Cl. H05b *37/00, 39/00*

U.S. Cl. 315—344 **9 Claims**

An electric circuit interrupting device comprising a gas-filled envelope containing an anode and a cathode, and between them a screen with an aperture through which a discharge can pass between anode and cathode. Means are provided for producing a magnetic field adjacent the aperture, and directed parallel to the path of the discharge, the maximum transverse dimension of the aperture being sufficiently small so that, when a discharge is passing, the presence of the magnetic field causes the discharge to be quenched.



3,636,408

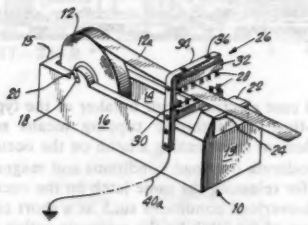
TAPE DISPENSER WITH STATIC ELECTRICITY NEUTRALIZER

Joseph George Shuman, Scotch Plains, N.J., assignor to Technical Tape Corp., New Rochelle, N.Y.

Filed May 26, 1970, Ser. No. 40,501

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 R **8 Claims**



Dispenser for film tapes such as pressure-sensitive adhesive tapes includes a rotatable mounting for a coil of tape so that the tape may be progressively uncoiled upon rotation of the coil and a selective device for dispensing portions of the tape as it is uncoiled. Static electricity on the tape is neutralized during uncoiling by either drawing the tape past a number of electrical conductors, e.g., grounded wires, disposed near the tape or applying to the tape a static neutralizing volatile fluid which is permitted to evaporate before or as the tape is dispensed.

3,636,409

ELECTRICAL GROUND FILTER MEANS FOR BOATS SUPPLIED WITH A SHORE-BASED SOURCE OF ALTERNATING CURRENT POWER

Frank H. Stephens, Jr., Morristown; Paul B. Byrne, Warren, and Edward P. Anderson, Livingston, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation

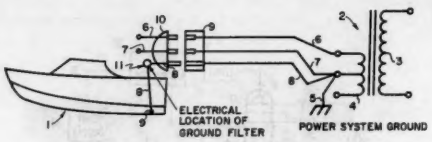
Filed Nov. 17, 1970, Ser. No. 90,254

Int. Cl. H01b *7/28*

U.S. Cl. 317—18 D **5 Claims**

An electrical ground filter means for boats or other vessels supplied with a shore-based source of alternating current power having current leads and an electrical grounding lead connected between the alternating current source and a boat, the ground filter means comprising a first pair of rectifiers in series with each other, a second pair of rectifiers in series

with each other and of opposite polarity with the first pair, a capacitor means, the first and second pairs of rectifiers and



the capacitor means being connected electrically in parallel of each other.

3,636,410

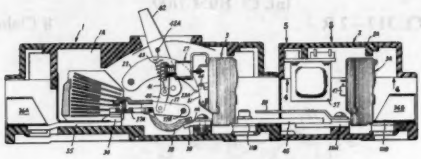
AUTOMATIC MOLDED CASE CIRCUIT BREAKER WITH TIME-DELAY OVERCURRENT TRIPPING

Franco Pardini, Via Biancospini 3, Milan, Italy

Continuation of application Ser. No. 721,236, Apr. 15, 1968, now abandoned. This application July 24, 1970, Ser. No. 64,063

Int. Cl. H02h *3/02, 3/08*

U.S. Cl. 317—36 TD **9 Claims**



A molded case electric circuit breaker of the type including inverse-time characteristic tripping means such as a bimetallic element for releasing a latch on the occurrence of sustained moderate overload conditions and magnetic-acting means also for releasing the same latch on the occurrence of sudden high-overload conditions such as a short circuit condition; release of the latch by the magnetic-acting means occurs only after a closely controlled short time-delay period, making possible the coordination of the circuit breaker in a selectivity system with other circuit breakers, allowing time for circuit breakers closer to fault to trip.

3,636,411

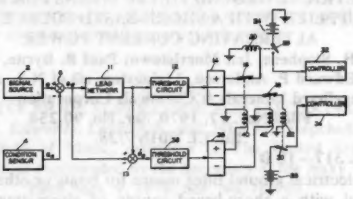
CONTROL LOGIC SWITCHING FOR AN ON-OFF CONTROLLER

James E. Bulloch, Grenada, Miss., assignor to The Bendix Corporation

Filed May 28, 1968, Ser. No. 732,567

Int. Cl. F41g *7/00*

U.S. Cl. 317—137 **9 Claims**



A switching device for an on-off controller. A signal corresponding to the desired value of a controlled variable is compared with an actual value signal for providing an error signal. The error signal, upon exceeding a predetermined threshold, is gated through normally closed signal switches for opening power switches to interrupt power to the controller. An error rate signal, upon exceeding a predetermined threshold, is gated to the signal switches for opening said switches whereupon the power switches are closed to apply power to the controller.

3,636,412

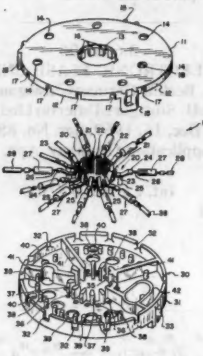
TUBE SOCKET ASSEMBLY

Stephen S. Simovits, Woodridge, and Christ J. Dumas, Forest View, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.

Filed Oct. 20, 1970, Ser. No. 82,418

Int. Cl. H02h *9/06*

U.S. Cl. 317—61 **30 Claims**



An improved tube socket assembly having controlled spark gaps incorporated therein and bifurcated spring-biased centrally cantilevered terminal pin contacts for improving the electrical contact between the terminal pins of a cathode-ray tube inserted therein and the terminal contacts, and the method of making same.

3,636,413

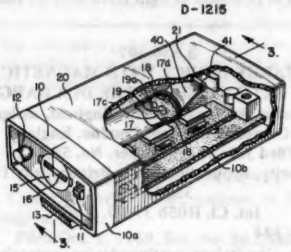
CONCEALED LOCK MEANS FOR TAMPERPROOF RECEIVER CASE

Alfred R. Ditthardt, Skokie, and Arthur W. Schmidt, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed July 6, 1970, Ser. No. 52,319

Int. Cl. H04b *1/08;* **H02b** *1/06*

U.S. Cl. 317—120 **1 Claim**



A tamperproof housing for a portable battery-operated electronic device has an electronics-supporting chassis with

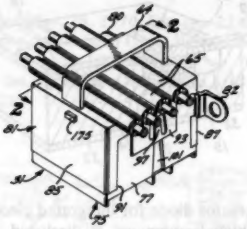
an enclosed externally-accessible battery compartment to provide a concealed lock comprising a pair of cantilever spring members having their fixed ends attached to the chassis on the exterior of the battery compartment and their free ends each having a flange portion for engaging a corresponding notch in a housing cover to thereby secure the housing cover to the chassis. Two small openings are provided at the periphery of the interior end of the cylindrical battery compartment. The housing may be opened by use of a cylindrical tool having a shaft diameter slightly smaller than that of the battery compartment and further having a pair of prongs at the distal end of the shaft corresponding to the openings. The cover is detached from the chassis by inserting the tool into the battery compartment so that the prongs engage the openings and depress the two resilient cantilever latch members, thereby disengaging the flanges from the notches and releasing the cover from the chassis.

3,636,414

RELAY APPARATUS

Harold A. McIntosh, South Pasadena; Hollis L. Randolph, Lakewood; William W. Chambers, Anaheim, and Marvin M. Graham, Seal Beach, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 28, 1970, Ser. No. 6,529
Int. Cl. H01h *9/00, 47/32*
U.S. Cl. 317—148.5 B **16 Claims**



A relay apparatus to operate in response to an induction from an electric current in a conductor and including a housing having a first contact mounted thereon. A flexible blade is carried by one end from the housing and carries a movable contact on its free end. Sensing means is responsive to a predetermined electrical current in the lead to provide a signal which is amplified to operate an actuator which flexes the blade to engage the movable contact with the first contact.

The blade may be of nonlinear configuration and the actuator may move transversely thereto and engage such blade intermediate its ends to cause flexing thereof to engage the movable contact with the stationary contact and to continue flexing of such blade to move the movable contact across the surface of the first contact whereby the blade will remain flexed during contact closure and will tend to unflex when the actuator is retracted to apply a shearing force to any weld that may have developed between the contacts to thereby break such weld.

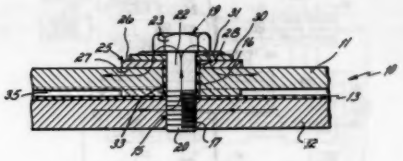
3,636,415

MOUNTING ASSEMBLY FOR RECTIFIERS

Harold H. Kruer, Ft. Mitchell, Ky., assignor to Teledyne Mid-America Corporation, Los Angeles, Calif.

Filed Apr. 14, 1971, Ser. No. 133,821
Int. Cl. H01l *1/12, 1/16*
U.S. Cl. 317—234 **11 Claims**

An assembly for mounting a plurality of rectifiers to a pair of current conductors. The conductors are two overlying plates, separated by a layer or sheet of insulation between their inner faces. Each rectifier is a high-current device in the form of an annular washer, and is mounted to an outer face of one of the conductors. The mounting means is a fastener having a shank which passes through one or a stack of the washer rectifiers, into an aperture extending perpendicularly to the conductors. The shank of the fastener is insulated from



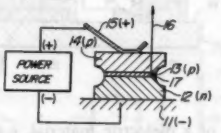
the conductor against which the rectifier is held, but is in electrical contact with the other conductor and is secured relative to both. A head or nut on the fastener exerts mechanical force on, and is in electrical contact with, the upper surface of the rectifier. The rectifying circuit includes the shank of the fastener.

3,636,416

LIGHT-EMITTING DIODE WITH SUBNANOSECOND RESPONSE TIME

Junichi Umeda, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,120
Claims priority, application Japan, Sept. 10, 1969, 44/71245
Int. Cl. H01l *3/20, 5/00, 9/00, 11/12;* **H05b** *33/00*
U.S. Cl. 317—234 R **3 Claims**



An ultrarapid luminescent semiconductor device capable of emitting light having a short response time comprising a semiconductor mixed crystal having a direct band-gap structure and a PN-junction formed therein. The composition of the part of the crystal through which light emitted by the PN-junction is transmitted is such that the component which makes the forbidden band of the semiconductor crystal narrow is increased in its proportion gradually or stepwise in the direction of light transmission so that light emitted due to the diagonal tunnelling effect can be transmitted, but light emitted by the transition between donors and acceptors is absorbed.

3,636,417

SCHOTTKY BARRIER SEMICONDUCTOR DEVICE

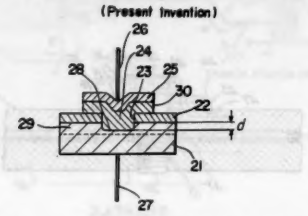
Akihiro Kimura, Takatsuki, Japan, assignor to Matsushita Electronics Corporation, Osaka-Prefecture, Japan

Filed Apr. 2, 1969, Ser. No. 812,753
Claims priority, application Japan, Apr. 5, 1968, 43/23015
Int. Cl. H01l *9/00*
U.S. Cl. 317—234 **5 Claims**

A semiconductor device having a Schottky barrier is prepared by forming a hollow or recess in a major surface of a semiconductor substrate, such as silicon, germanium or gallium arsenide, and then forming a layer of metal, such as nickel, tungsten, molybdenum, vanadium, gold or palladium, in the recess. The metal contacting the semiconductor

material forms a Schottky barrier in the recess. It is preferred that the recess exceed 200A. in thickness and that the thickness of the metal layer exceed the depth of the recess.

In another embodiment, a layer of insulation is provided



on the major surface of the semiconductor surface. Then, a hole is opened through the insulating layer and a recess is formed in the substrate. Thereafter, a metal layer is formed in the recess as described above.

3,636,418

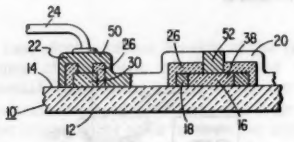
EPITAXIAL SEMICONDUCTOR DEVICE HAVING ADHERENT BONDING PADS

Joseph Richard Burns, Trenton, and Joseph Hurlong Scott, Newark, both of N.J., assignors to RCA Corporation

Filed Aug. 6, 1969, Ser. No. 847,925

Int. Cl. H01l *5/00*

U.S. Cl. 317—234 R **8 Claims**



A substrate of a dielectric material, e.g., sapphire, has a matrix of semiconductor components, e.g., diodes on a surface thereof. The components comprise a layer of a semiconductor material, e.g., silicon, including various doped regions. Connector strips are provided on the substrate for interconnecting the various components in rows and columns, and for connecting the components to bonding pads on the substrate. The bonding pads comprise a layer of the semiconductor material in direct contact with the substrate, and a layer of metal on top of the silicon layer. A layer of insulating material is optionally included between the semiconductors and metal layers.

3,636,419

PRESSURE-BIASED SEMICONDUCTOR COMPONENT FREE FROM DAMAGE TO SEMICONDUCTOR BODY

Kurt Raithel, Uttenreuth, and Rene Rosenheinrich, Ebermannstadt, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

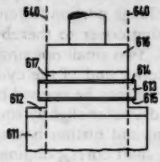
Filed Sept. 10, 1969, Ser. No. 856,702

Claims priority, application Germany, July 11, 1969, P 19 35 226.2

Int. Cl. H01l *1/14*

U.S. Cl. 317—234 R **3 Claims**

A wafer-shaped semiconductor body is sandwiched between contact electrodes. A foil of ductile metal bears against each contact electrode. The foils are congruent and have contours which are substantially coincidental and which are substantially in overlapping alignment. A contact member bears against each foil and is urged against each surface of the semiconductor via the corresponding foil and the



corresponding contact electrode to form glidable pressure contacts.

3,636,420

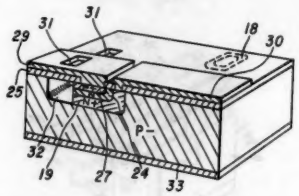
LOW-CAPACITANCE PLANAR VARACTOR DIODE

George D. Vendelin, Richardson, and Roger R. Webster, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original application Mar. 7, 1969, Ser. No. 806,046, now abandoned. Divided and this application Feb. 2, 1970, Ser. No. 889,799

Int. Cl. H01l *3/00*

U.S. Cl. 317—234 **4 Claims**



A planar varactor diode for integrated circuit applications, especially at high frequencies, is disclosed. This diode has low-leakage currents, improved reversed bias characteristics, and reduced junction and MOS capacitance. The low-leakage currents are obtained by minimizing the surface perimeter of the device; the low-junction capacitance is obtained by reducing the junction area of the two active regions; and the reduced MOS capacitance is achieved by offsetting the anodic region underneath the anode contact.

3,636,421

OXIDE COATED SEMICONDUCTOR DEVICE HAVING [311] PLANAR FACE

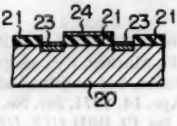
Yoshiyuki Takeishi, Tokyo; Hisashi Hara; Tai Sato, both of Yokohama-shi, and Isao Sasaki, Kawasaki-shi, all of Japan, assignors to Tokyo-Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 23, 1968, Ser. No. 786,113

Claims priority, application Japan, Dec. 28, 1967, 42/84999

Int. Cl. H01l *1/10, 3/00, 5/06*

U.S. Cl. 317—235 R **6 Claims**



A semiconductor device includes a single crystal substrate comprising a flat surface which has a [311] crystal plane with

a tolerance of ±2° with respect to said [311] lattice plane. An insulating film is formed on the flat top surface of the substrate.

3,636,422

TRACTION MOTOR CONTROL SYSTEM

Lalan G. Miller, and John M. Mills, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 817,664, Apr. 21, 1969, now abandoned. This application Sept. 18, 1970, Ser. No. 73,645

Int. Cl. H02p *7/68*

U.S. Cl. 318—95 **13 Claims**

There is disclosed a control system for vehicle traction motors. The system includes an ON and OFF chopper-type current controller and switching systems for connecting the motors and the current controller in either traction (motoring) configuration or braking (generating) configuration and for suppressing the ON mode of the current controller just prior to changing over from one configuration to the other and reactivating the ON mode of the controller after the switch from one to the other configuration is completed.

3,636,423

CYCLOCONVERTER ARRANGEMENTS WHICH PREVENT CIRCULATING CURRENTS

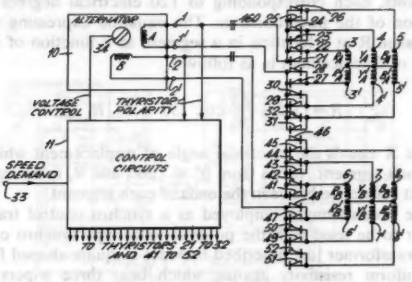
John Edward Jenkins, Edinburgh, Scotland, assignor to National Research Development Corporation, London, England

Filed Mar. 25, 1970, Ser. No. 22,600

Claims priority, application Great Britain, Apr. 2, 1969, 17,420/69

Int. Cl. H02p *5/40;* **H02m** *5/14*

U.S. Cl. 318—227 **16 Claims**



A cycloconverter is described in which each supply phase has a separate circuit path to the load, each path having a separate pair of oppositely poled controlled rectifiers. This arrangement prevents circulating currents flowing and thus removes the need for large expensive reactors to limit these currents. Logic circuits for firing the controlled rectifiers both at unitary and at any load power factor are also described.

3,636,424

MOTOR DRIVE SYSTEM WITH ACCELERATION-DECELERATION CONTROL

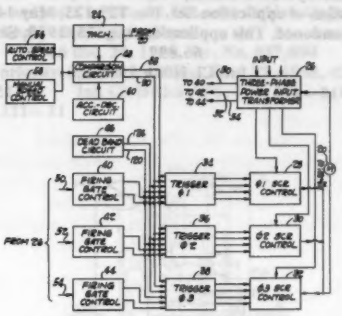
John F. Reed, Middleburg Heights, Ohio, assignor to The New Britain Machine Company, New Britain, Conn.

Filed June 23, 1969, Ser. No. 835,441

Int. Cl. H02p *5/16*

U.S. Cl. 318—259 **8 Claims**

A drive system utilizes silicon-controlled rectifiers and a feedback loop for operating a direct current motor from alternating current input power at a predetermined speed regardless of load conditions. Circuitry is provided for controlling the width of the dead band of the system, and a circuit is provided for controlling acceleration and deceleration of the motor, said circuit having a capacitor and switch means responsive to an error signal to charge and discharge said capacitor.



3,636,425

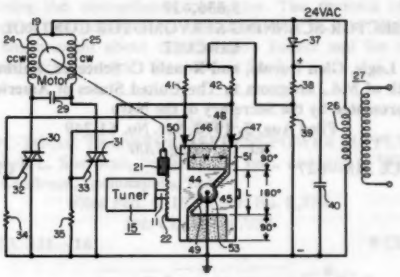
SHAFT-POSITIONING MECHANISM

George R. Dickinson, Norridge; Scott N. Moritz, Villa Park, and Werner H. Puls, Northbrook, all of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 2, 1970, Ser. No. 94,356

Int. Cl. G05b *11/01*

U.S. Cl. 318—467 **6 Claims**



A drive mechanism for displacing a control shaft to a preset position employs a bidirectional electric motor which is energizable through a pair of independent switches that connect the motor windings to an energizing source. A motor actuator includes a pair of spaced-apart conductive members supported for rotation with the shaft and individually connected to an assigned one of the switches. The actuator also includes a contactor having a span greater than the spacing between the conductive members and locatable to a point related to a desired preset shaft position. The contact is displaceable from a standby to an index or operating position where it engages one of the conductive members to activate a motor-energizing switch and thereby initiate displacement of the shaft toward the preset position. The activated switch is subsequently deactivated when both the conductive members simultaneously engage the contact upon their arrival at the point related to the preset position.

3,636,426

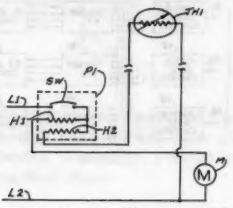
MOTOR CONTROL SYSTEM INCLUDING MOTOR PROTECTOR AND REMOTE SENSOR FOR CONTROLLING MOTOR OPERATION

Francis P. Buiting, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 729,123, May 14, 1968, now abandoned. This application Aug. 25, 1970, Ser. No. 66,897

Int. Cl. H02h *5/04*

U.S. Cl. 318—471 15 Claims



The control system employs a thermostatic motor protector for controlling a system parameter, such as temperature, at a distance from the motor as well as for protecting the motor. A thermistor is provided having a resistance which varies in response to changes in the value of the parameter. The thermistor is interconnected with a heater associated with the motor protector to cause the protector to deenergize the motor if the value of the parameter exceeds a predetermined threshold.

3,636,427

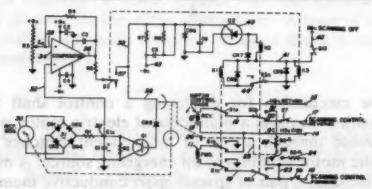
SECTOR-SCANNING SERVOMOTOR CONTROL CIRCUIT

John Logis, Glen Burnie, and Ronald C. Scheerer, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 5, 1970, Ser. No. 61,249

Int. Cl. G05g *5/00*

U.S. Cl. 318—627 5 Claims



A fast stop-and-reverse two-phase motor control circuit having a solid-state timing network or a motor speed sensing network coupled to solid-state switches in relay circuits to produce a timed reverse torque on the motor proportional to torque time or motor speed to stop the motor and hold it against a limit stop with low-power torque without exceeding limit stop mechanical strength.

3,636,428

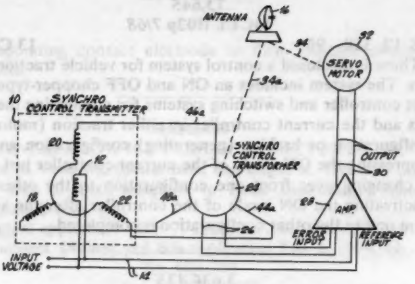
SYNCHRO SERVOSYSTEM IN WHICH A POTENTIOMETER WITH UNIQUE CHARACTERISTICS REPLACES THE RECEIVER

Joseph J. Yanosik, Huntington Station, Long Island, N.Y., assignor to Betatronix, Inc., East Northport, N.Y.

Filed Mar. 20, 1968, Ser. No. 714,684

Int. Cl. G05b *1/06*

U.S. Cl. 318—663 8 Claims



Potentiometer structures for synchro systems and synchro systems utilizing such structures. One or more potentiometers are employed in place of the usual rotor and stator inductive transformer arrangements employed in the control transmitter and control transformer of a synchro system. The potentiometer employed in the synchro control transformer has a resistivity which varies in accordance with a cotangent function of the displacement of the movable wiper of the potentiometer from a reference position. Essentially the control transformer potentiometer employs three similar resistive segments, each corresponding to 120 electrical degrees of rotation of the potentiometer. The equation expressing the resistance R at a location in a segment as a function of the angle of displacement is as follows:

$$R=\left[1/2-\frac{\sqrt{3}}{6}\ \text{ctn.}\ (30°+X)\right]R_t$$

where X equals the electrical angle of displacement which, for each segment, varies from 0° to 120°, and R_t is the open circuit resistance between the ends of each segment.

The potentiometer employed as a synchro control transmitter to be used with the potentiometer-type synchro control transformer just described includes a square-shaped film of uniform resistivity against which bear three wipers of equal angular separation (120°). The wipers provide the output signal to the control transformer. The input to the square-shaped film is an AC or DC signal applied to opposing sides of the film. A midpoint of one or both of the two remaining sides is typically grounded. The signals from the three wipers are related to the DC input signal by a sine function, i.e., dependent upon the sine of the angle of rotation of the wipers from a reference position.

3,636,429

LOGIC CIRCUITRY FOR PROVIDING STOPPING CONTROL FOR STEPPING MOTORS

Marek Jakubowski, and Joseph P. Pawletko, both of Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

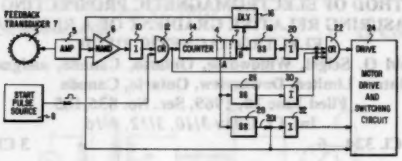
Filed May 8, 1970, Ser. No. 35,797

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 7 Claims

The invention is concerned with circuitry for providing a sequence of stopping pulses derived from motor feedback pulses. It includes means for providing an initial stop pulse

which reverses the phase of the motor to thereby develop a negative torque. Intermediate stopping pulses in the form of feedback pulses continue to apply the negative torque to the



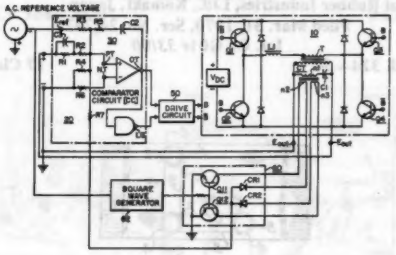
rotor. A final stopping pulse not derived from the feedback pulses is applied to bring the motor to its equilibrium position. In this manner, a stepping motor can be stopped with substantially no oscillations after a specified number of steps.

3,636,430

ANTICIPATORY FEEDBACK CONTROL FOR INVERTERS

Andress Kernick; Manvel A. Geyer, both of Lima; Glenn W. Ernsberger, Worthington, and John F. Vonderembse, Lima, all of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1970, Ser. No. 83,958
Int. Cl. H02m *1/12, 7/52*
U.S. Cl. 321—9 A **5 Claims**



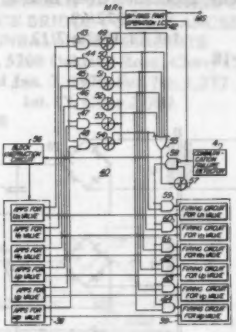
The invention comprises apparatus for comparing the filtered power transformer output waveform of a pulse-width-modulated inverter circuit with an AC reference voltage waveform and generating output voltage signals to control the inverter drive circuit to the extent necessary to produce an inverter output waveform substantially duplicating the reference voltage waveform and substantially void of low order harmonics. An anticipatory signal developed by a circuit which monitors the change in current with respect to time in a capacitor included in a filter circuit connected to the output of the power transformers provides optimum response of the apparatus to changes in the output waveform beyond prescribed units relative to the reference voltage waveform.

3,636,431

BYPASS CONTROL SYSTEM FOR HIGH-VOLTAGE DC CONVERTER USING SEMICONDUCTOR CONTROL RECTIFIERS

Takehiko Machida; Yukio Yoshida, both of Tokyo; Noriyoshi Fujii, and Kenjiro Yokoyama, both of Hitachi-shi, all of Japan, assignors to Hitachi Ltd. and Zaidan Hojin Denryo Chuo Kenkyusho, Tokyo, Japan

Filed Dec. 24, 1969, Ser. No. 887,934
Claims priority, application Japan, Dec. 27, 1968, 43/95466
Int. Cl. H02m *1/08, 1/18*
U.S. Cl. 321—11 **9 Claims**



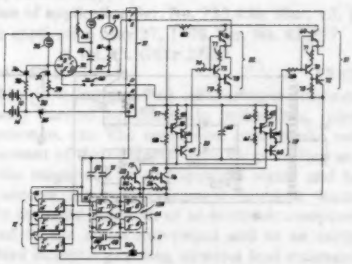
A bypass control system wherein the rectifiers or inverters in high-voltage DC power transmission, DC interconnecting frequency changer and so forth are constituted by semiconductor controlled rectifiers, and the design is made such that the semiconductor controlled rectifiers constituting two arms in series of the converter can be fired simultaneously if necessary, thereby eliminating bypass valves required for removing the conventional converter. The removal of the converter can be achieved in a short time in case that one arm has brought about commutation failure and the other arm connected in series therewith is fired.

3,636,432

DC-TO-AC TRANSFORMERLESS POWER SUPPLY

Marshall L. Sherman, Indianapolis, Ind., assignor to William E. Landrum, Indianapolis, Ind.

Filed Feb. 4, 1970, Ser. No. 8,554
Int. Cl. H02m *7/52*
U.S. Cl. 321—16 **9 Claims**



A solid-state power supply with two, positive, 120-volt, 60-Hz. square wave outputs which are 180° out of phase from each other. The power supply contains a crystal-controlled

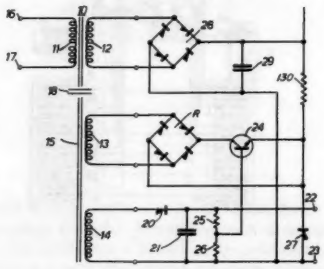
oscillator powered by batteries. The oscillator output frequency is divided to 60 Hz. and split into two signals with a 180° phase shift. The two waves are amplified and fed through constant-current circuits to limit the current draw on the batteries. The constant-current circuits are connected to quasi-complementary circuits by low-impedance coupling circuits.

3,636,433

VOLTAGE STABILIZER APPARATUS

Edward Philip Hyatt, Caterham, England, assignor to Brandenburg Limited

Filed Jan. 28, 1970, Ser. No. 6,475
Claims priority, application Great Britain, Jan. 29, 1969, 4,972/69
Int. Cl. H02m 7/12
U.S. Cl. 321—18 **3 Claims**



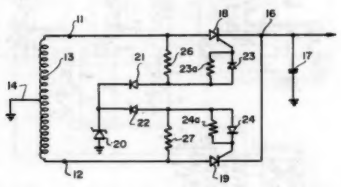
The invention provides a high-voltage low-current electric supply apparatus which is stabilized by use of a low-voltage transistor. A transformer with high-leakage inductance has two secondary windings, from one of which the high-voltage output is obtained; the other winding is a low-voltage winding supplying a transistor forming a controllable load. By controlling this transistor, as a function of the high-voltage output, the high-voltage output is controlled and can be stabilized.

3,636,434

VOLTAGE REGULATOR FOR PERMANENT MAGNET ALTERNATORS

Ljubomir Beuk, Chicago, and Robert Vargas, Arlington Heights, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 4, 1970, Ser. No. 86,747
Int. Cl. H02p 9/00; H02m 7/22
U.S. Cl. 322—28 **7 Claims**



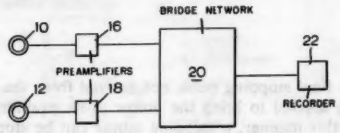
A voltage regulator having silicon controlled rectifiers connecting opposite ends of the output winding of an alternator to a voltage utilization circuit connected to the output terminal of the voltage regulator. The voltage regulator utilizes the voltage difference between the gate cathode circuit of the silicon controlled rectifiers to establish a reference current conducting point at which the silicon controlled rectifiers will be rendered conductive.

3,636,435

METHOD OF ELECTROMAGNETIC PROSPECTING BY MEASURING RELATIVE GRADIENT OF A RESULTANT ELECTROMAGNETIC FIELD

Harold O. Seigel, Willowdale, Ontario, Canada, assignor to Scintrex Limited, Downsview, Ontario, Canada

Filed June 20, 1969, Ser. No. 835,185
Int. Cl. G01v 3/10, 3/12, 3/16
U.S. Cl. 324—6 **3 Claims**



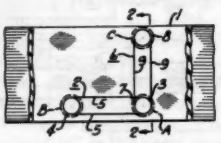
This invention relates to a method of electromagnetic prospecting wherein a pair of detecting coils are rigidly mounted on a common support on a moving vehicle for the purpose of measuring the relative gradient of the resultant electromagnetic field. Rigidly supporting the coils on the moving vehicle renders them insensitive to misorientation of the detectors and this is of special advantage in airborne electromagnetic survey work.

3,636,436

BELT FISSURE DETECTION DEVICE

Noritaka Kurauchi; Tokio Fujimoto, both of Suita; Kenichi Yoshida, Sakai; Masamitsu Ui; Zenji Nagata, both of Komaki, and Hirokazu Kouno, Kasugai, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Mar. 31, 1970, Ser. No. 24,242
Int. Cl. G01r 33/00
U.S. Cl. 324—34 **17 Claims**

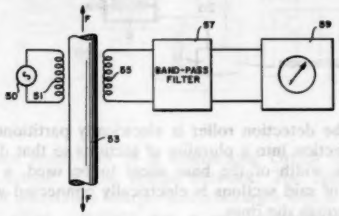


A conveyor belt fissure detection apparatus having a plurality of pairs of fissure detecting coils buried in a conveyor belt in the transverse or belt-width direction and buried in the belt in the longitudinal direction with the pairs of coils being positioned at uniform intervals along the length of the conveyor belt to detect a fissure when it occurs either in the transverse or longitudinal direction of the belt thereby breaking any of the detecting coils. An exciting coil, excited by an oscillator and receiving coils connected to a detector circuit are positioned in proximity of the conveyor belt in aligned relation with the belt detecting coils embedded in the conveyor belt to electromagnetically couple with them when they travel by in proximity to the exciting and receiving coils. A fissure in the conveyor belt is detected by a detector circuit when one of the coils in the belt is broken causing signal interruption indicative of an occurrence of fissure in the belt.

3,636,437
METHODS FOR MAGNETICALLY MEASURING STRESS USING THE LINEAR RELATIONSHIP OF THE THIRD HARMONIC TO STRESS

Herman A. Soulant, Jr., 501 Gilscot Pl., Rockville, Md., and Henry C. Brisker, 14112 Sturtevant Road, Silver Spring, Md.

Filed Aug. 25, 1970, Ser. No. 66,750
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 ST **15 Claims**

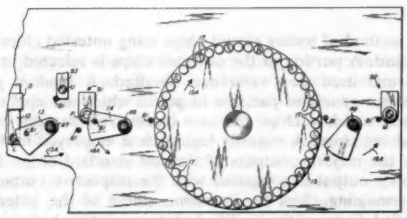


A method for determining applied stress, yield stress and residual stress in a magnetic material. The method utilizes the amplitude of an induced third harmonic signal as an indication of the stress. Two measurements of the third harmonic amplitude are made, one for an unstressed and a second for a stressed condition. The amplitude indicative of the stress in the material is compared to the initial third harmonic reading according to a linear relationship to determine the stress.

3,636,438
METHOD OF AND APPARATUS FOR MEASURING A TIME VARYING CHARACTERISTIC OF A MAGNETIC CORE

John O. Etchison, Jr., Clemmons, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,653
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 R **9 Claims**

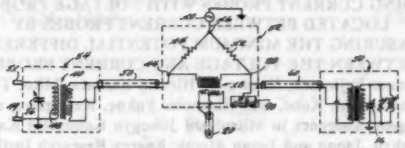


A useful permeability characteristic value may be extrapolated for a ferrite core from permeability data obtained at two distinct instants in time, t_1 and t_2. These instants terminate two different predetermined time periods elapsed from a demagnetizing operation performed upon the core at a time t_0. Testing apparatus provides for the performing of demagnetizing, first permeability testing and second permeability testing steps upon a succession of ferrite cores. All permeability tests are performed in a single permeability testing station at appropriate times t_1 and t_2 for each particular core being tested, i.e., dependent upon the time t_0 for the particular core. Each core is transported about a closed loop between the two permeability tests and is returned to the permeability testing station at the time t_2. An additional testing station for performing a miscellaneous test upon each core at a time t_i intermediate the times t_1 and t_2 is located in an appropriate position along the closed loop. A series of linear and rotary conveyors are operated in timed relationship so as to transport each successive core, demagnetized at a time t_0, to the permeability testing station at the proper time t_1, then along the loop to the intermediate, miscellaneous testing station at the proper time t_i, then back to the permeability testing station to complete the loop at the proper time t_2 and, finally, to an appropriately located unloading station subsequent to the time t_2.

3,636,439
REMOTE MEASURING TRANSFORMER COUPLED IMPEDANCE BRIDGE FOR BALANCED AND UNBALANCED CIRCUITS

Frank S. Colligan, 5200 Oakland Road, Chevy Chase, Md.

Filed Jan. 7, 1970, Ser. No. 1,272
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **8 Claims**



An impedance or admittance measuring bridge for use primarily at radiofrequencies capable of measuring balanced or unbalanced transmission lines and antennas and capable of determining the degree of balance of a transmission line and/or its associated antenna. A first balance circuit is coupled to a source of electrical energy and includes a signal detector for sensing the presence or absence of a known signal condition. A calibrated circuit having variable impedance is coupled to the first balance circuit whereby the unknown impedance/admittance is connected to the test circuit and whereby the calibrated circuit impedances are adjustable to create a null signal condition at the detector when the value of the unknown impedance is equal to the value of the calibrated circuit impedances.

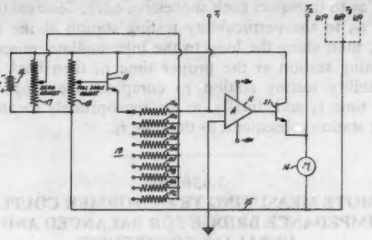
3,636,440
ISOLATION-GUARDING MEASURING INSTRUMENT FOR IN-CIRCUIT COMPONENT TESTING

Melvin E. Stanford, Ballston Spa, N.Y., assignor to Systomation, Inc., Schenectady, N.Y.

Continuation of application Ser. No. 713,436, Mar. 15, 1968. This application May 27, 1970, Ser. No. 41,717
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **13 Claims**

A portable, isolation-guarding measuring instrument that may be easily carried by electronic technicians, television service repairmen, etc. The instrument comprises a suitable meter movement of the voltmeter-type for providing an indication of the magnitude of an electrical signal and having first and second input measurement terminal leads for coupling the opposite terminals of an in-circuit component to be measured to the meter movement and to an excitation signal. A third isolation-guarding terminal lead maintained at essentially the same potential as the potential of one of the first and second input measurement terminal leads, is provided for connection to nodal points of other circuit components connected in parallel circuit relationship with the in-circuit component to be measured. As a result, measurement

of the actual value of the in-circuit component can be obtained without requiring that the in-circuit component be



disconnected even partially from the other components with which it is in circuit relationship.

3,636,441

METHOD OF MEASURING CRACK DEPTHS IN ELECTRICALLY CONDUCTIVE METAL WORKPIECES USING CURRENT PROBES WITH VOLTAGE PROBES LOCATED BETWEEN CURRENT PROBES BY MEASURING THE MINIMUM POTENTIAL DIFFERENCE BETWEEN THE VOLTAGE AND CURRENT PROBES

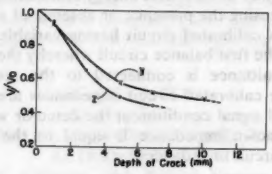
Tsutomu Fujimura, Naka-gun; Hiroshi Kamata, Mito; Tomio Yamaguchi, Kobe, and Hisanobu Fukue, Kakogawa, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan and Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 19, 1970, Ser. No. 12,607

Claims priority, application Japan, Feb. 22, 1969, 44/13065; Nov. 15, 1968, 43/83391; Dec. 25, 1968, 43/95767; Feb. 10, 1969, 44/9258; Feb. 28, 1969, 44/14559

Int. Cl. G01r *27/14*

U.S. Cl. 324—64 **1 Claim**



A method for determining in a nondestructive manner the existence, the depth and the length of cracks in an electrically conductive metal workpiece such as a steel plate or a steel pipe, by means of an electric resistance measurement which is carried out by using a pair of current probes and a pair of voltage probes located between the current probes, and, if a defect is located between the current probes and the voltage probes, the measurement is made on the basis of the minimum potential difference detected by the voltage probes rather than by the maximum value in the measured voltage distribution.

3,636,442

DETECTION SYSTEM FOR DETECTING HOLES IN PHOTOCOPYING PAPER

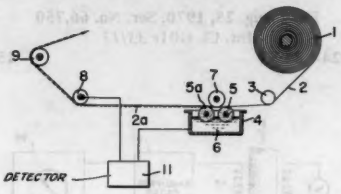
Manabu Doi, Numazu-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 18, 1969, Ser. No. 877,776

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 **4 Claims**

A device for detecting defect holes and the like in photocopying paper wherein an electrically conductive detection roller is disposed in electrically insulated relation with a main body of a photographic sensitizing agent application device at a position where a base sheet passes with its back surface being wrapped over said detection roller while the agent applied to the front surface being not yet sufficiently



dried. The detection roller is electrically partitioned in the axial direction into a plurality of sections so that depending upon the width of the base sheet to be used, a required number of said sections is electrically connected with each other through slip rings.

3,636,443

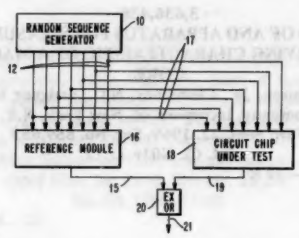
METHOD OF TESTING DEVICES USING UNTESTED DEVICES AS A REFERENCE STANDARD

Shanker Singh, Beacon, and Vijendrap P. Singh, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,007

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **13 Claims**



A method of testing circuit chips using untested chips as a standard. A portion of the untested chips is selected at random and used as a reference standard. A random pulse generator generates patterns of pulses which are applied to the test standard chips and also successively to each of the remaining chips. A majority logic gate is employed to determine the majority outputs of the test standard chips. Each majority output is compared with the respective outputs of the remaining chips to determine which of the latter are qualified. Some of the qualified chips are then substituted for the test standard chips and the cycle is then repeated with the qualified chips, and repeated again with the twice-qualified chips. With each successive cycle the probability of qualifying good chips converges toward unity.

3,636,444

APPARATUS FOR MEASURING SMALL CHANGES IN CONDITION-SENSITIVE CAPACITANCE TRANSDUCERS

Charles F. Strawn, Arlington, Tex., and John C. Donovan, Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

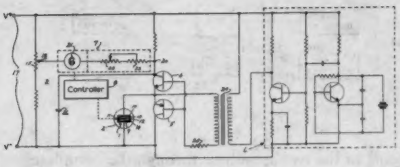
Filed Jan. 30, 1970, Ser. No. 7,176

Int. Cl. G01n *27/26*

U.S. Cl. 324—61 R **14 Claims**

A humidity-sensitive capacitance sensor or transducer is connected in one leg of a modified Maxwell commutated DC

bridge with the other legs formed of resistors. The sensor continually senses the humidity condition and establishes a proportional output signal of the bridge in accordance with changes in capacitance over a small range on a suitable galvanometer. A crystal-controlled oscillator actuates a pair of transistors to alternately connect the condition-sensitive



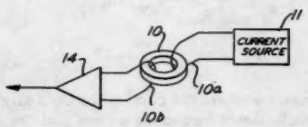
capacitance transducer in a discharging circuit and in a charging circuit in the bridge network. The capacitance transducer alternately charges and discharges with a null output at a given condition and a proportionate output in response to any deviation of the condition sensed by the capacitance sensor. A span adjustment and a charge reservoir capacitor are employed to facilitate the operation.

3,636,445

NONREPETITIVE WAVEFORM PARAMETER MEASUREMENT

Sarkis Douaihy, Riverside; John F. Renz, Cinnaminson; William R. Blatchley, Delran, and Terry W. Stahl, Cinnaminson, all of N.J., assignors to Computer Test Corporation, Cherry Hill, N.J.

Filed Apr. 3, 1969, Ser. No. 813,078
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 R **14 Claims**



Analyzing a nonrepetitive waveform by measuring the value of the peak amplitude A_p of the waveform, the time duration t_p between a predetermined time and the time that the peak amplitude occurs and the time duration t_s between the predetermined time and the time that the peak amplitude has decreased to 10 percent of its peak value. The peak amplitude of the waveform is detected and delayed and the difference is derived between the delayed and undelayed peak signals to provide a zero crossing when the delayed peak signal reaches its peak and is equal to the undelayed peak signal. The zero crossing is detected and a command signal produced.

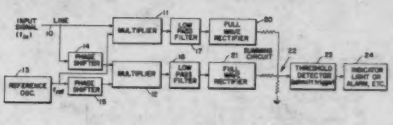
3,636,446

RECEIVER FOR DETECTING SIGNALS WITHIN A PREDETERMINED BANDWIDTH

Roland E. Genter, Falls Church, Va., and Raymond S. Connell, Jr., Adelphi, Md., assignors to H. B. Engineering Corporation, Silver Springs, Md.

Filed Mar. 4, 1970, Ser. No. 16,418
Int. Cl. G01r *23/02, 23/14*
U.S. Cl. 324—78 F **9 Claims**

A receiver for detecting the presence of a signal, said receiver including a first multiplier for multiplying together the signal to be detected and a signal at substantially the same frequency as the signal to be detected, a second multiplier for multiplying together the signal to be detected and a signal at substantially the same frequency as the signal to be detected, said signals provided to the second multiplier being



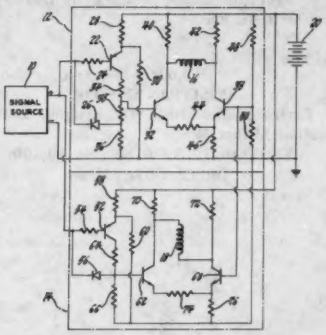
separated by about 90° by phase-shifting means, low-pass filters coupled to the output of each of the multipliers and a detector for combining the signals from the filters and sensing if the combined level thereof is greater or equal to a predetermined level.

3,636,447

WIDE-ANGLE TWO-COIL ELECTRICAL GAUGE

Robert B. Gelenius, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 6, 1970, Ser. No. 34,981
Int. Cl. G01r *7/00, 1/20*
U.S. Cl. 324—140 R **3 Claims**



A wide-angle electrical gauge having two coils whose magnetic axes are at right angles. A signal source supplies a signal whose magnitude is proportional to the magnitude of the condition to be indicated. A sine generator is responsive to the output of the signal source and controls the current through one of the coils in a manner such that the magnetic field along its magnetic axis varies in an approximated sinusoidal fashion. A cosine generator is responsive to the output of the signal source and controls the current through the remaining coil in a manner so as to generate a magnetic field along its magnetic axis which is phase shifted from the magnetic field generated by the sine generator so as to take the form of an approximated cosine waveform in relationship thereto. A magnetic armature aligns itself with the resultant of the two magnetic fields whose angular position corresponds to the magnitude of the condition being measured.

3,636,448

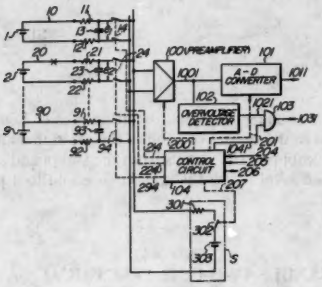
SIGNAL SOURCE DISCONNECTION-DETECTING METHOD FOR PLURAL SOURCES

Yoshiyuki Nihashi; Akira Osawa, and Hiroshi Kuwahara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 14, 1970, Ser. No. 54,811
Claims priority, application Japan, July 18, 1969, 44/56465
Int. Cl. G01r *31/02*
U.S. Cl. 324—140 **6 Claims**

A disconnection-detecting method used with a system wherein analog voltages from a number of points are scanned so that the analog voltages are amplified by a preamplifier

into a predetermined range of voltage levels and are then converted into corresponding digital form, said method characterized in that upon completion of an analog to digital conversion for each point of measurement, a disconnection-



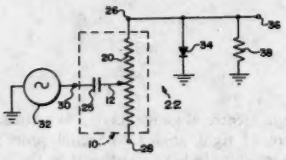
detecting voltage is applied to the input of the preamplifier for, on time-sharing basis, a predetermined time duration concurrent with the analog voltage to thereby detect a disconnection in the line.

3,636,449

POSITION SENSOR

Leslie W. Partridge, Janesville, Wis., assignor to The Burdick Corporation, Milton, Wis.

Filed Feb. 12, 1970, Ser. No. 10,800
Int. Cl. G01r *15/10*
U.S. Cl. 324—157 **9 Claims**



A circuit for sensing the position of a movable element such as a galvanometer pointer, recording stylus or the like includes a distributed electrical impedance to which the movable element is capacitively coupled. An oscillating signal is coupled across a gap between the movable element and the impedance, and is detected by rectification in order to provide an output signal indicating the position of the movable element. The oscillating signal is chosen so that the output signal can be utilized directly as a DC position signal.

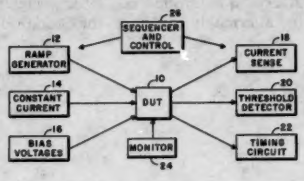
3,636,450

DIGITAL MOS FET CHARACTERISTIC TESTER

Ronald G. Griffin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 23, 1969, Ser. No. 887,692
Int. Cl. G01r *31/22*
U.S. Cl. 324—158 T **1 Claim**

Apparatus for testing parameters of semiconductor field-effect devices wherein participation of a human operator is minimized. Sequencer and control means selectively interconnects instrumentation to a device under test, test initiation means energizes the instrumentation, and test completion means senses test completion, maintains the parameter reading on monitoring means, and deactuates the instrumentation. The sequencer means may provide automatic



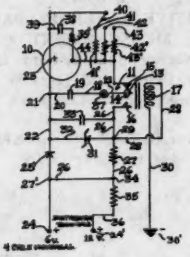
sequencing of the test apparatus through the complete testing cycle.

3,636,451

TACHOMETER CIRCUIT FOR AN INTERNAL COMBUSTION ENGINE OR THE LIKE

Vivian Luther Westberg, 3400 Westach Way, Sonoma, Calif.

Filed Nov. 12, 1969, Ser. No. 875,940
Int. Cl. G01p *3/48*
U.S. Cl. 324—169 **1 Claim**



A tachometer wherein the current for the charging capacitor of the tachometer measuring circuit and the current for energizing the coil of the relay switch in the circuit, are from a single source, the tachometer having incorporated in its circuit an arrangement to permit its universal use on four-cycle engines with four, six, or eight cylinders, and having the further provision wherein the capacitor may be charged by the multiple pulsing from the center of low-tension magneto, assuring a sufficient amount of current per unit of time for full zener control. A further improvement in switching provides a similar universal feature on three ratios of two-cycle engines.

3,636,452

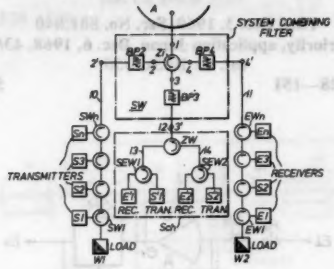
RADIO RELAY SYSTEM

Erich Nuding, Backnang, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Aug. 27, 1970, Ser. No. 67,499
Claims priority, application Germany, Aug. 28, 1969, P 19 43 735.5
Int. Cl. H04b *1/60*
U.S. Cl. 325—3 **5 Claims**

The antenna of a broadband radio relay system, of the type wherein all of the receivers and all of the transmitters are connected to respective common transmitting or common receiving lines and connected to the antenna via a combining or mixing filter, is utilized by an auxiliary narrow band radio relay system having a plurality of receivers and transmitters. The receiving and transmitting lines of the auxiliary system

are combined, by means of appropriate combining filters, into a common transmission-reception line for the auxiliary



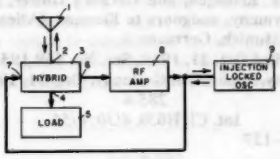
system and connected to one port of a four-port circulator included in the system-combining filter.

3,636,453

CONCURRENT SAME-FREQUENCY FM RADIO REPEATER

Quintin H. George, Sudbury, Mass., assignor to Cutler-Hammer, Incorporated, Milwaukee, Wis.

Filed May 7, 1969, Ser. No. 822,541
Int. Cl. H04b 7/14
U.S. Cl. 325—7 **3 Claims**



An antenna system, used for simultaneous reception and transmission, is coupled by way of a hybrid device to an RF amplifier having less gain than the isolation loss introduced between its output and input by the hybrid. Additional gain, beyond the finite isolation of the hybrid, is provided by an oscillator which is coupled in single-port fashion to the circuit and tends to synchronize with applied signals that are substantially weaker than its output.

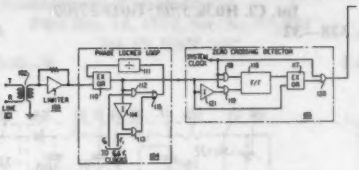
3,636,454

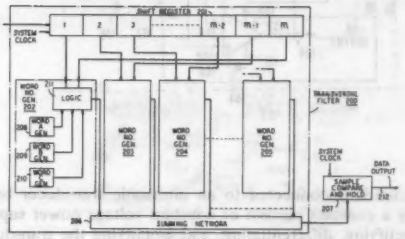
DIGITAL CIRCUIT DISCRIMINATOR FOR FREQUENCY-SHIFT DATA SIGNALS

Gerald Philip Pasternack, Colts Neck, and Burton R. Saltzberg, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 28, 1970, Ser. No. 58,848
Int. Cl. H03k 9/06; H04l 27/14
U.S. Cl. 325—320 **6 Claims**

FSK data signals are applied to a phase-locked loop whose binary signal output has an average amplitude which varies with the frequency of the incoming data signal. A zero-crossing detector produces a pulse for each zero crossing of the binary signal and the pulses are processed by a transversal digital filter having finite memory and arranged to provide triangular weighting to each input pulse. The baseband signal is then recovered from the filter output. In one embodiment,





the zero-crossing detector and the transversal filter are advantageously arranged to be time shared by a plurality of FSK signal channels.

3,636,455

TUNABLE INPUT CIRCUIT

Willy Minner, Ingolstadt, and Gerhard Lindner, Pfaffenhofen, both of Germany, assignors to Telefunken Patentverwertungsgeselischaft m.b.H., Ulm am Danube, Germany

Filed Sept. 29, 1969, Ser. No. 861,924
Claims priority, application Germany, Sept. 27, 1968, P 17 91 182.9
Int. Cl. H03h 7/10; H04b 1/18
U.S. Cl. 325—379 **11 Claims**

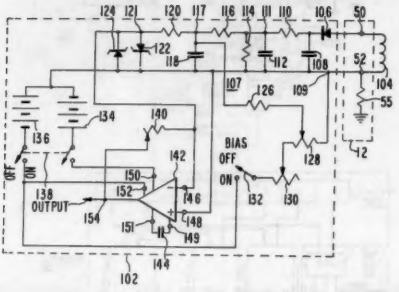
A tunable input circuit with high selectivity for feeding a signal to a variable-frequency band-pass filter with tuning elements identical to those of the input circuit. The high selectivity produced by the input circuit is a minimum in the range of the received frequency and a maximum in the range of the image frequency. The input circuit is a bridge having four arms with impedances in them and four points connecting the arms. The impedances are diagonally matched, and one set is variable. One set of diagonally opposite points connecting the arms is connected between an antenna lead and ground. A voltage-variable capacitance (such as a voltage-variable diode) is connected between the other pair of connecting points. A tuning voltage is fed back to the voltage-variable capacitance means. This voltage is preferably the same voltage used to tune the band-pass filter.

3,636,456

IMPEDANCE-MEASURING NETWORK

Loren G. Wright, Alameda County, Calif., assignor to Uthe Technology, Inc., Mountain View, Calif.

Filed Dec. 29, 1969, Ser. No. 888,330
Int. Cl. H03k 5/08; G01r 27/00
U.S. Cl. 328—32 4 Claims



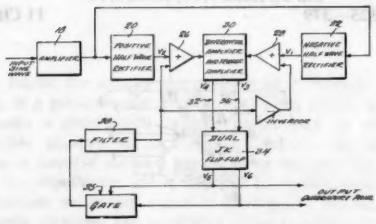
A circuit is connected to an ultrasonic transducer being fed by a constant current or constant voltage power supply. By rectifying, differentiating, and amplifying the transducer coil voltage an output signal that is a function of the transducer and load impedance is provided that can be displayed so as to determine the operating condition of the ultrasonic apparatus.

3,636,457

QUADRATURE SQUARE WAVE GENERATOR

James A. Hart, Jr., Doraville, and Lorimer Clayton, Jr., Stone Mountain, both of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Feb. 24, 1970, Ser. No. 13,734
Int. Cl. H03k 1/12
U.S. Cl. 328—29 7 Claims



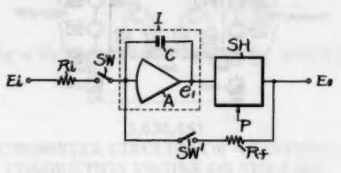
An improved circuit for producing two square wave electrical signals in relative phase-quadrature from an input sine wave whereby the amplitude and relation of the two output square waves do not vary with either the frequency or amplitude of the input sine wave. In one embodiment, the input sine wave is split into positive and negative rectified signals, and each signal then is used to produce intermediate signals which have a first and second output level and which change that level each time the potentials of the positive and negative rectified signals are equal. These intermediate signals are applied to logical devices to cause production of the output square wave signal in quadrature. An averaging and level shifting circuit is employed to shift the DC bias of the rectified signals so that the output signals are in quadrature.

3,636,458

PERIODIC AVERAGING CIRCUIT

Takashi Sugiyama; Satoshi Kurata, and Keiki Yamaguchi, all of Tokyo, Japan, assignors to Kabushikikaisha Yokogawa Denki Seisakusho (Yokogawa Electric Works, Ltd.), Tokyo, Japan

Filed Dec. 3, 1969, Ser. No. 881,840
Claims priority, application Japan, Dec. 6, 1968, 43/89838
Int. Cl. H03k 5/00
U.S. Cl. 328—151 5 Claims



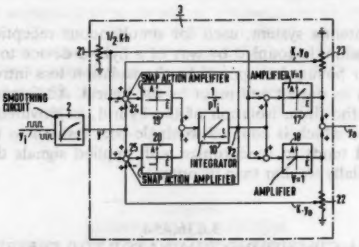
A periodic averaging circuit having an integrator supplied with an input signal, a sampling hold circuit supplied with the output of the integrator and a sampling pulse, and a feedback circuit for feeding the output of the sampling hold circuit back to the integrator, the sampling hold circuit holding the output of the integrator in accordance with the sampling pulse applied thereto.

3,636,459

SMOOTHING CIRCUIT FOR SMOOTHING PULSATING DIRECT VOLTAGES

Felix Blaschke, Erlangen, and Gerhard Hutter, Maichingen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 21, 1969, Ser. No. 868,193
Claims priority, application Germany, Oct. 31, 1968, P 18 06 285.6
Int. Cl. H03k 4/30, 4/56
U.S. Cl. 328—127 7 Claims



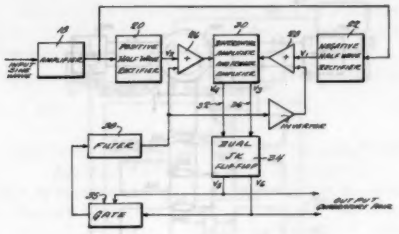
A smoothing circuit for smoothing pulsating direct voltages utilizes an electronic hysteresis circuit which produces a hysteresis loop having a width adjusted to the instantaneous direct voltage. The hysteresis circuit comprises an electronic function generator for producing a zero-symmetrical hysteresis loop of constant width and an amplifier connected to the output of the function generator. The amplifier has a sensitivity limit corresponding to half the width of the hysteresis loop and a feedback between the amplifier output and the function generator input reduces the constant width of the hysteresis loop.

3,636,460

QUADRATURE SQUARE WAVE GENERATOR

James A. Hart, Jr., Doraville, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Feb. 24, 1970, Ser. No. 13,735
Int. Cl. H03k 5/20
U.S. Cl. 328—140 10 Claims



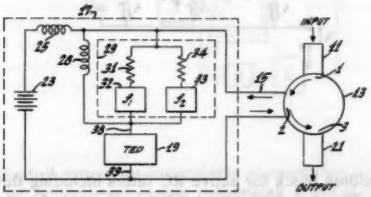
A circuit for producing two square wave electrical signals in relative phase-quadrature from an input sine wave whereby the amplitude and relation of the two output square waves do not vary with either the frequency or amplitude of the input sine wave. In one embodiment, the input sine wave is split into positive and negative rectified signals, and each signal then is used to produce intermediate signals which have a first and second output level and which change that level each time the potentials of the positive and negative rectified signals are equal. These intermediate signals are applied to logical devices to cause production of the output square wave signals in quadrature. In one embodiment, part of the output square wave signals is fed back to shift the DC bias of the rectified signals so that the output signals are in quadrature.

3,636,461

TRANSFERRED ELECTRON AMPLIFIER WITH OSCILLATION STABILIZATION CIRCUIT

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation

Filed Dec. 29, 1969, Ser. No. 888,476
Int. Cl. H03f 3/04
U.S. Cl. 330—5 3 Claims



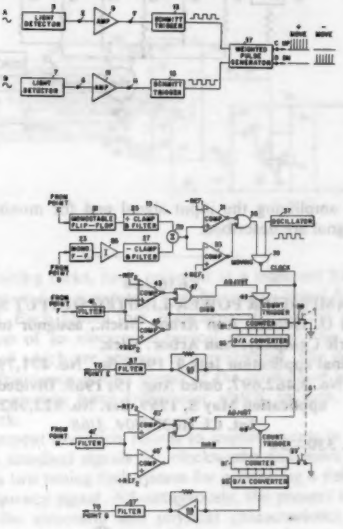
Stabilization of transferred electron devices having the product of carrier concentration (n) and length L between terminals of the device greater than 5×10^{11} cm.$^{-2}$ is provided by a selective loading network.

3,636,462

AUTOMATIC DC LEVEL CONTROLLING SYSTEM FOR A DC-COUPLED AMPLIFIER

William A. Baldauf, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 11, 1970, Ser. No. 97,233
Int. Cl. H03f 1/02
U.S. Cl. 330—9 7 Claims



A system has been provided which automatically compensates for DC level drift of the interference signal DC-coupled amplifier in a laser interferometer system. An analog feedback signal provides automatic compensation of the DC level at the input of a DC amplifier by sensing when the DC level at the output of the amplifier drifts out of a specific range. A bidirectional counter is controlled by the sensor to record increments of correction which are converted to an analog signal by a digital-to-analog converter and after appropriately amplified is fed back to the input of the amplifier to compensate for the detected drift and bring the DC level back within the specified range.

3,636,463

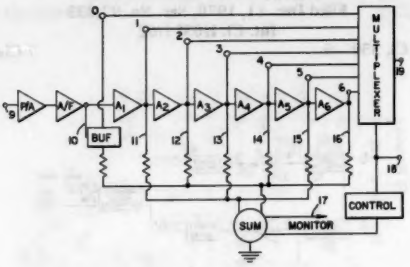
METHOD OF AND MEANS FOR GAIN-RANGING AMPLIFICATION

Leo Ongkiehong, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,429
Int. Cl. H03g 3/30
U.S. Cl. 330—29 19 Claims

A gain-ranging amplifier is disclosed comprising a plurality of fixed gain amplifier stages connected in cascade and means for taking the output signal from any one of the fixed gain amplifier stages. Control means are described whereby such output signal is taken from the amplifier stage immediately preceding the first such stage which is being overdriven at a particular point in time by the signal which is being amplified. Specific circuits are disclosed for use in

seismic geophysical exploration applications and means for generating a signal representative of the amount of gain utilized in amplifying the input signal and for monitoring the input signal are described.



3,636,464

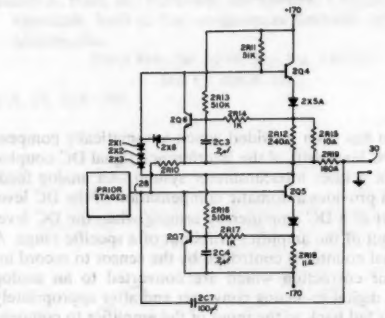
DC AMPLIFIER POWER-LIMITED OUTPUT STAGE

Edward O. Gilbert, Ann Arbor, Mich., assignor to Reliance Electric Company, Ann Arbor, Mich.

Original application July 9, 1965, Ser. No. 471,790, now Patent No. 3,462,697, dated Aug. 19, 1969. Divided and this application May 8, 1969, Ser. No. 822,982

Int. Cl. H03f 3/04, 3/68

U.S. Cl. 330—24 **3 Claims**



A direct-coupled amplifier output stage includes a pair of series-connected output transistors. The input signal from prior stages is applied to the base of one of the series transistors and the output signal is taken from in between the two transistors. A separate protective transistor is associated with each of the two series-connected transistors. Each protective transistor provides an opposing signal to the series transistor which it protects in opposition to the drive signal so as to limit the current through the series transistor. Each protective transistor is controlled to provide its opposing signal not only in accordance with the current through the series transistor which it is protecting, but also in accordance with the voltage across the series transistor which it is protecting, so that both of the series transistors are "power limited." Thus the output stage can safely supply more output current when it is providing a low-output voltage than when it is supplying a larger output voltage.

3,636,465

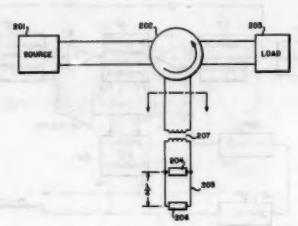
COMPENSATED NEGATIVE RESISTANCE DEVICE

Alan C. MacPherson, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 29, 1967, Ser. No. 671,889

Int. Cl. H03f 3/12

U.S. Cl. 330—61 A **10 Claims**



A compensated one-port negative resistance device is obtained by using two negative elements spaced one-quarter wavelength apart so that identical changes in the two negative elements produce no first-order changes in the total impedance as viewed from the single port. The resulting device is used in a reflection-type amplifier which is more stable (for the same gain) than the corresponding amplifier in which a single negative resistance is the active element.

3,636,466

BUILDING BLOCK FOR ACTIVE RC FILTERS

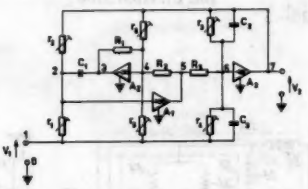
Kare Hjovard Mossberg, Akersberga, and Dag E:son Akerberg, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed Feb. 25, 1970, Ser. No. 13,955

Claims priority, application Sweden, Mar. 11, 1969, 3328/69

Int. Cl. H03f 1/36

U.S. Cl. 330—85 **10 Claims**

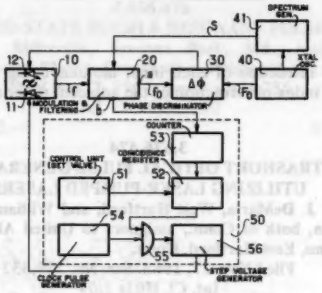


A building block for active RC filters including three amplifiers. The output of one amplifier is connected to the input of another amplifier via an impedance. Furthermore, the output of one amplifier is connected to the output terminal of the building block. The inputs of the amplifiers are each via an impedance connected to the input terminal of the building block and via another impedance to the output terminal. Because of the fact that the impedances between the in- and output terminals and the inputs of the amplifiers are triamble, the zeros and the poles of the transfer function can be arbitrarily located in the complex *s* plane.

3,636,467
FREQUENCY SYNTHESIZER WITH NUMERICALLY CONTROLLED SCANNING VOLTAGE

Lucien Babany, Blanc Mesnil, and Antoine Poussin, Neuilly-sur-Seine, both of France, assignors to C.I.T. Compagnie Industrielle Des Telecommunications, Paris, France

Filed Mar. 13, 1969, Ser. No. 807,768
Claims priority, application France, Mar. 13, 1968, 143590
Int. Cl. H03b 3/04
U.S. Cl. 331—4 5 Claims

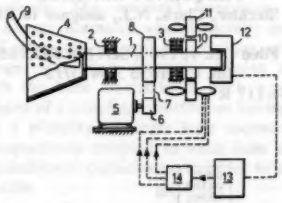


Frequency synthesizer utilizing harmonic counting in which a designated indication of the desired frequency determines the steps of control voltage to be applied by means of a stepped voltage generator to the variable oscillator in control thereof in such a way that its frequency is advanced to the capture range of a phase discriminator providing fine control.

3,636,468
CONTROL SYSTEM FOR MAINTAINING A VARIABLE INERTIA-VIBRATING BODY-SUBSTANTIALLY AT RESONANCE

Brian Ellis, Huddersfield, England, assignor to Thomas Broadbent & Sons Limited, Huddersfield, England

Filed Dec. 31, 1969, Ser. No. 889,389
Claims priority, application Great Britain, Jan. 7, 1969, 850/69
Int. Cl. B04b 9/10; H03b 3/04
U.S. Cl. 331—4 9 Claims

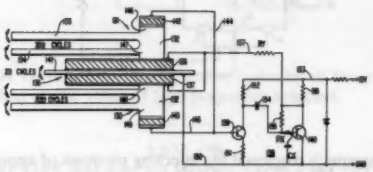


A control system for maintaining at resonance a vibratory body of nonconstant inertia comprising a swept-frequency oscillator whose output frequency is arranged to determine the frequency of vibration of said body, a device adapted to provide a signal which is indicative of a resonance condition of the body, and means adapted to detect change of said signal and to increase the sweep range of said oscillator accordingly, such that each time the frequency corresponding to resonance of the body is passed during successive sweeps, the signal from said device acts to decrease the sweep range of said oscillator until a predetermined sweep range, substantially centered on said frequency corresponding to resonance of the body, has been attained.

3,636,469
BEAT FREQUENCY TIME STANDARD

William E. Reefman, Santa Barbara, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Nov. 10, 1969, Ser. No. 875,428
Int. Cl. H03b 5/30
U.S. Cl. 331—41 3 Claims



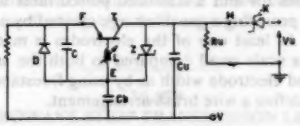
Two tuning forks, each resonant at a different frequency, are connected to generate a beat-frequency signal for a time standard. Each tuning fork is incorporated within the feedback loop of an electromechanical oscillator, the separate outputs of which are applied to a modulator. The difference or beat-frequency output signal of the modulator is used to drive an electric force transducer which, in turn, drives a clockwork.

The present invention relates to improvements in generating time standard signals for clockworks and more particularly to a two tuning fork system for generating a stable, low-beat frequency signal. Advantageously, the present invention utilizes the structural and physical characteristics of high "Q" tuning forks as described in my copending application, Ser. No. 843,923, filed July 23, 1969, for "Tuning Forks and Oscillators Embodying the Same."

3,636,470
VARIABLE INDUCTANCE-CONTROLLED OSCILLATOR SWITCHING CIRCUIT

Alfredo Olivel, and Guido Fiorentino, both of Ivrea, Turin, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea Turin, Italy

Continuation of application Ser. No. 779,993, Nov. 29, 1968, now abandoned. Oct. 27, 1970, Ser. No. 84,527
Int. Cl. G01p 13/00; H01h 35/00; H03b 7/06
U.S. Cl. 331—65 12 Claims



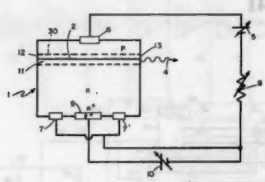
An electronic switching circuit including a transistor oscillator changeable between its oscillating and nonoscillating condition. The oscillator includes an inductor variable between an inductance at which the oscillating condition exists and an inductance at which the oscillating condition is stopped.

3,636,471

METHOD OF AND APPARATUS FOR ENHANCING RADIATION FROM INDIRECT-GAP SEMICONDUCTORS

Robert H. Rediker, Newton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 3, 1969, Ser. No. 838,795
Int. Cl. H01s 3/18, 3/09
U.S. Cl. 331—94.5 21 Claims



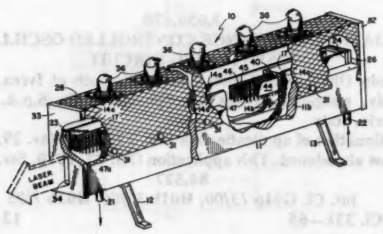
Apparatus is disclosed for injecting phonons of appropriate frequency and intensity into the luminescent regions of an indirect-gap semiconductor to enhance luminescence therein. If the luminescent region is an optical resonant cavity in which an inverted population of the electric energy levels or bands of the semiconductor exists, the injected phonons can function to initiate and/or enhance lasing action in the region.

3,636,472

PULSED LASER DEVICE EMPLOYING ELECTRODES WITH PROJECTIONS

Donald A. Leonard, Stoneham, and Henry W. Smith, Essex, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed July 10, 1968, Ser. No. 743,867
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 8 Claims



Electrodes for and a stabilized pulsed laser utilizing electrodes for providing a gas discharge created by a pulsed electric field. At least one of the electrodes is made uniformly rough on a scale small compared to both the interelectrode spacing and electrode width as by using freestanding wires to generally define a wire brush arrangement.

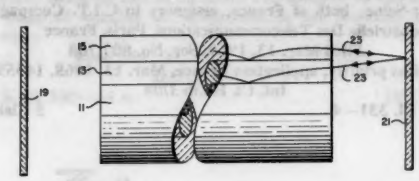
3,636,473

COMPOSITE GLASS LASER ROD

C. Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 6, 1969, Ser. No. 804,750
Int. Cl. H01s 3/06, 3/09, 3/16
U.S. Cl. 331—94.5 11 Claims

This specification discloses a composite glass laser rod comprising an inner cylindrical core surrounded by annuli of laser material. The annuli have different levels of doping so that the annuli have different indices of refraction, with the index of refraction of each inner annulus being slightly less than the index of refraction of the adjacent outer annulus.

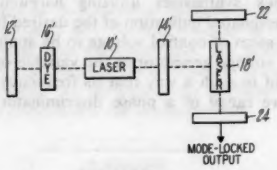


3,636,474

ULTRASHORT OPTICAL PULSE GENERATION UTILIZING LASER-PUMPED LASERS

Anthony J. DeMaria, West Hartford, and William H. Glenn, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 27, 1968, Ser. No. 779,332
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 8 Claims



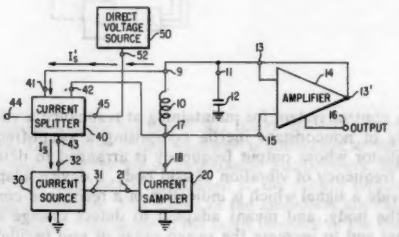
A mode-locked laser generating a train of repetitive pulses is used to optically pump other lasers such as organic dye lasers. The repetitive pulses will provide an amplitude modulation of the gain of the pumped laser, and will mode-lock the oscillating modes of the pumped laser output, producing a series of repetitive pulses from the pumped laser.

3,636,475

OSCILLATOR WITH VARIABLE REACTIVE CURRENT FREQUENCY CONTROL

Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation

Filed Oct. 1, 1969, Ser. No. 862,705
Int. Cl. H03b 3/04, 5/12
U.S. Cl. 331—117 R 19 Claims



In a controlled oscillator system, current flowing in one of the reactive elements of a frequency selective network is

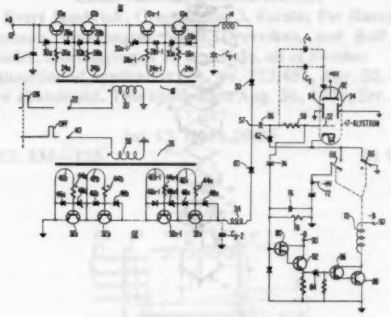
sampled and a second reactive current having phase and frequency which corresponds to the phase and frequency of sampled reactive current is generated. A path of variable conductance is provided for the second reactive current which is in parallel relationship to the reactive element. As the conductance of the parallel path is varied in response to a control signal, the second shunt reactive current changes, producing a change in the total reactive current in the oscillator system, thereby varying the frequency of oscillation of the system.

3,636,476

SOLID-STATE DOUBLE RESONANT PULSER

Walter E. Milberger, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 7, 1969, Ser. No. 874,755
Int. Cl. H03c *5/02*
U.S. Cl. 332—7 **11 Claims**



A pulser circuit for high-frequency tubes such as klystrons and the like wherein the klystron is driven "on" and "off" in response to the resonant charging and discharging of the klystron's grid capacitance under the control of a pair of semiconductor switch circuits which alternately operate to first act as a voltage multiplier for the grid capacitance to produce a grid bias potential and then resonantly charge and discharge the grid capacitance to turn the tube "on" and "off" respectively. The resonant operation permits the recovery of energy normally wasted thereby increasing the efficiency of operation as well as requiring smaller power supply voltage. Cascoded transistor chains are used as switches with the base electrode of each transistor being driven by means of a coupling transformer having a multiturn primary and a plurality of single loop secondary windings which are respectively coupled to each base electrode for decreasing transformer capacitance in order to achieve high-video bandwidth.

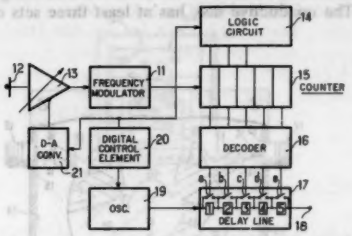
3,636,477

FREQUENCY MODULATOR INCLUDING SELECTIVELY CONTROLLABLE DELAY LINE

Jacques Selz, Viroflay, France, assignor to C. I. T. Compagnie Industrielle Des Telecommunications, Paris, France

Filed Nov. 5, 1969, Ser. No. 874,294
Claims priority, application France, Nov. 5, 1968, 172628
Int. Cl. H03c *3/08*
U.S. Cl. 332—18 **9 Claims**

A frequency modulated HF wave is obtained by applying a HF carrier wave of preselected frequency to a variable phase shifter consisting of a delay line made up of a plurality of switchable delay units controlled by a pulse counter to effect a periodic phase shift of 360°, wide band operation being ensured by correction of the effective capacity of the counter depending on the value of high frequency selected.

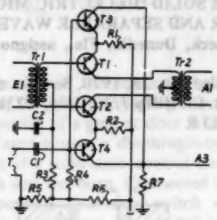


3,636,478

ACTIVE BALANCED MODULATOR CIRCUIT

Erwin Glock, Neckarrems, Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt, Germany

Filed July 14, 1970, Ser. No. 54,830
Claims priority, application Germany, July 14, 1969, P 19 35 611.7
Int. Cl. H03c *1/54*
U.S. Cl. 332—43 B **9 Claims**



An active balance modulator circuit wherein the active switching elements of the modulator circuit are switched suddenly or in jumps as if controlled by a square wave carrier signal but utilizing a sine wave carrier input signal. Each of the respective switching elements of the balanced modulator circuit is coupled with a further respective switching element to form a pair of differential amplifiers. The carrier wave input signal is utilized to directly control only the further one of the switching elements of each differential amplifier. Further embodiments wherein the further switching elements are simultaneously utilized as the active elements of a second balanced modulator circuit and as the active elements in the diagonal arms of a ring-type balanced modulator circuit are also disclosed.

3,636,479

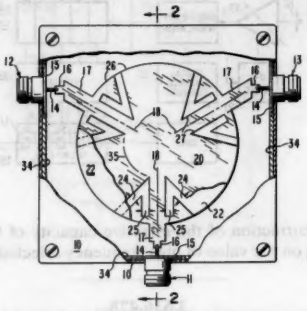
MICROWAVE STRIP TRANSMISSION LINE CIRCULATOR

Norman Hartz, San Jose, and Bruce K. Horne, Palo Alto, both of Calif., assignors to Microwave Associates (West) Inc., Sunnyvale, Calif.

Filed Aug. 19, 1970, Ser. No. 65,070
Int. Cl. H01p *1/32*; H03h *7/48*
U.S. Cl. 333—1.1 **5 Claims**

A microwave strip transmission line circulator is disclosed comprising at least one body of ferrite material, a ground plane member overlaying one surface of the ferrite body, and

a conductive disk overlaying another surface of the ferrite body. At least three strip transmission line conductors extend radially from the periphery of the conductive disk with the axes of the transmission line conductors defining equal angles. The conductive disk has at least three sets of indentations with each set comprising two convergent indentations extending from the periphery of the disk to two juxtaposed lines located substantially equidistant from and along opposite sides of one of said axes. Means are also provided for magnetizing the body of ferrite material.

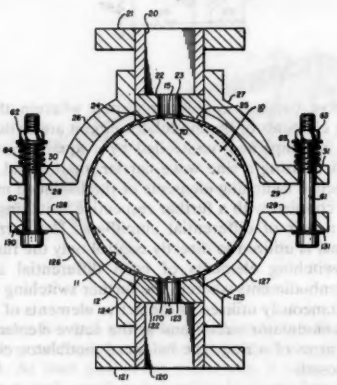


3,636,480

STABLE SOLID DIELECTRIC MICROWAVE RESONATOR AND SEPARABLE WAVEGUIDE MEANS

William N. Hoeck, Dunedin, Fla., assignor to Sperry Rand Corporation

Filed Jan. 28, 1970, Ser. No. 6,614
Int. Cl. H01p *1/30, 7/06;* **C23b** *5/64*
U.S. Cl. 333—83 R **3 Claims**



A compact, stable microwave resonator employs a solid quartz cylinder coated on its surface with a material having good electrical conductivity at very high frequencies. The coating is made up of an inner layer of chromium much thinner than the skin depth of microwave currents and a thick outer layer of a metal of high conductivity for microwave currents. The coating has a pair of diametrically positioned apertures for coupling microwave energy to hollow wave guides extending radially from the cylindrical conductive surface. The waveguides have end faces matching the curved conductive surface and each has a mounting frame with arms extending partly around the cylindrical surface. Opposed flanges on the arms cooperate with resilient fasteners to clamp the waveguides in cooperative positions on opposite sides of the cylindrical surface.

3,636,481

MODULAR ELEMENTS FOR ELECTRICAL FILTERS AND FILTERS EMPLOYING THE SAME

Jacques R. Boulin, Paris; Marcel R. Bertin, Sceaux, and Alexis Nepomiastchy, Bagneux, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Mar. 30, 1970, Ser. No. 23,797
Claims priority, application France, May 2, 1969, 6913976
Int. Cl. H03h *1/00, 7/10*
U.S. Cl. 333—70 S **12 Claims**

Electrical filter modular elements built in the form of sealed units, having two, three, or four external connection terminals, contained in a metal casing formed by a cap and a baseplate and having a generally parallelepipedal shape, said elements comprising a variable inductance and one or more fixed capacitors disposed inside the casing and connected to one another and to said inductance and terminals, the latter consisting of connection pins extending through said baseplate in a direction perpendicular thereto. The inductance and capacitors are stacked parallel to the plane of said plate and form a block borne at the bottom on an insulated socket through which said pins extend; the capacitors are of flat shape with wrapping plates parallel to said plane, preferably without insulating coating or impregnation, and are stacked in a recess provided in said socket.

3,636,482

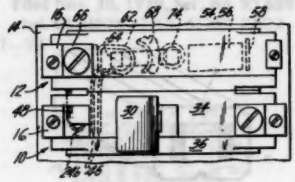
MODULAR CIRCUIT BREAKERS AND PANELBOARDS WITH GROUND-FAULT PROTECTION

William Harold Edmunds, Valley Forge, Pa., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed May 25, 1970, Ser. No. 40,328
Int. Cl. H01h *83/20*
U.S. Cl. 335—6 **6 Claims**

Modular circuit breaker units and modular ground-fault tripping units can be stacked separately and assembled to each other by the user as required. When the units are assembled, there is a mechanical coupling from the ground fault tripper to the release mechanism of the circuit breaker, and one terminal of the circuit breaker unit is connected to a terminal of the ground-fault tripping unit. That connection completes a series circuit that extends through both units from a line terminal on one of the units to a load terminal on the other unit. The ground-fault tripping unit also has "-

neutral" terminal and a second "load" terminal. The electrical connection and the trip-mechanism coupling between the units are established incidental to assembling the units, and



the ground-fault tripping unit has a part that prevents use of one of the circuit breaker terminals from being used an an external circuit connection.

3,636,483

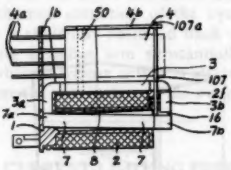
ELECTROMAGNETIC RELAY

Karl Evert Jambrink, Grumsgatan 3, Farsta; Per Harry Elias Claesson, Osterhagens Gard, Drevviken, and Rolf Albin Zander, Storhagsvagen 28 A, Alvsjo, all of Sweden

Continuation of application Ser. No. 723,451, Apr. 23, 1968, now abandoned. This application Aug. 26, 1970, Ser. No. 67,287

Int. Cl. H01h *50/26*

U.S. Cl. 335—135 **21 Claims**



An electromagnetic relay of the miniature relay type with a contact spring group and a magnetic circuit which comprises a substantially rectangular loop formed by a magnetic core and a magnetizing coil surrounding a part of the core. The core part surrounded by the coil is the armature of the relay, the armature being pivoted at one end and movable in a direction transversally to the axial direction of the coil and to the longitudinal direction of the armature.

3,636,484

SPRINGLESS SWITCH CONSTRUCTIONS FOR USE IN THE PROTECTIVE CIRCUIT OF BURGLAR ALARM SYSTEMS

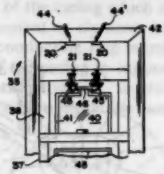
Lawrence N. Lea, 3601 Johnson Avenue, Bronx, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,817

Int. Cl. H01h *1/54*

U.S. Cl. 335—205 **7 Claims**

A conductive permanent magnet structure fixed on the frame of a protected opening, attracts into contact with itself, a conductive loosely slidable armature having limited movement on the closure member; such magnet and slide constituting a switch protecting the opening. In closed condition of the switch, these switch parts are contiguous portions of the current path in the protective circuit. In installations where slide movement during the attraction is vertical, gravity returns the slide to a rest position, to be ready for a reestablishment of the protective circuit. When such direction is horizontal, the slide is automatically cammed to be in proper position if necessary, for the protective circuit to be put into operative condition. These switches avoid the need of cords across a parting of the frame and its closure.



Stocking a few parts, affords the fabrication of switches of different constructions, either in the shop or on the job, to meet installation requirements and conditions.

3,636,485

SECURITY ALARM SYSTEM

Paul Weathers, 809 Station Avenue, Hadden Heights, N.J.

Filed Feb. 10, 1969, Ser. No. 797,918

Int. Cl. H01h *19/00*

U.S. Cl. 335—205 **5 Claims**

A security alarm system for protecting restricted access areas against entry by unauthorized personnel. A switch operated by the opening of a gate or door in a wall surrounding the protected area causes a diaphragm-type horn to be operated by means of a solid-state control circuit connected between the switch and the horn. Connected in the circuit is a magnetically operated disarming switch which may be turned to a number of positions. This switch is placed on the inside of a window in the wall so that authorized personnel may through the use of a magnet and by visual reference to indicia on the face of the switch position the switch so as to disarm the system and gain access to the area without operating the horn.

3,636,486

METHOD FOR ORIENTATION OF CURRENT-CONDUCTING NONMAGNETIC BODIES IN A MAGNETIC FIELD AND A DEVICE FOR CARRYING SAME INTO EFFECT

Benyamin Alexandrovich Ioffe, ulitsa Raunas, 45/2, kv. 81, and Robert Karlovich Kulnin, ulitsa Gorkogo, 53, kv. 19, both of Riga, U.S.S.R.

Filed Dec. 16, 1969, Ser. No. 885,532

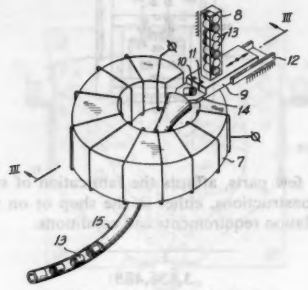
Claims priority, application U.S.S.R., Dec. 25, 1968, 1,289,057

Int. Cl. H01f *1/00*

U.S. Cl. 335—219 **3 Claims**

A method for orientation of current-conducting nonmagnetic bodies according to which said bodies are oriented due to the effect of an AC magnetic field with a simultaneous introduction into the orientation zone of auxiliary ferromagnetic bodies which facilitate the effect of orientation, and a device for carrying said method into effect, comprising an electromagnet fed by the alternating current between whose poles the orientation zone is arranged and a means for introduction at least two auxiliary ferromagnetic bodies thereinto.

The method and device are designed for use in various branches of technology, mostly in a watchmaking industry,



for rapid and clear orientation of small-size bodies (component members) according to a certain design feature.

3,636,487

ELECTROMAGNETIC CIRCUIT

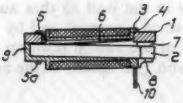
Karl Evert Jarnbrink, Grumsgatan 3, 123 44 Farsta; Rolf Albin Zander, Storhagsvagen 28 A, 125 32 Alvsjo, and Per Harry Elias Claesson, Osterhagens Gard, 142 00 Trangsund, all of Sweden

Filed Feb. 27, 1970, Ser. No. 14,941

Claims priority, application Sweden, Mar. 4, 1969, 2931/69

Int. Cl. 335 *7/08*

U.S. Cl. 335—270 **7 Claims**



An electromagnetic circuit with a yoke and a movable armature in a channel of a coil, with one end of the armature pivoted against one end portion of the yoke and with the other free end of the armature forming a working airgap with the yoke. The yoke has a substantially flat shape with a notch or an aperture for the coil to nest in so that the coil channel and the armature are situated substantially at one side of the flat yoke and the working airgap is outside of the coil.

3,636,488

TRANSFORMER OR INDUCTOR ASSEMBLY

Ernst Wiesner, Dornbirn, Austria, assignor to Dr. Walter Zumtobel, Dornbirn, Austria

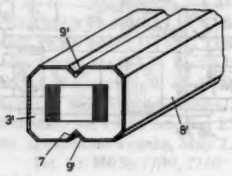
Filed Jan. 27, 1971, Ser. No. 110,013

Claims priority, application Austria, Feb. 5, 1970, 1039/70

Int. Cl. H01f *15/02*

U.S. Cl. 336—83 **14 Claims**

A transformer or inductor assembly whose magnetic circuit consists of stacked yoke and core laminations, the yoke laminations forming a channel in which the core laminations and a coil wound about the core laminations are received. An outer protective shell of sheet material is fastened to the magnetic circuit by edge portions of the sheet material



received in a groove which extends in the yoke in the magnetically neutral zone of the circuit.

3,636,489

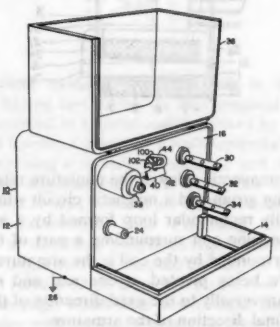
TRANSFORMER HAVING AN EXTERNALLY OPERABLE NO-LOAD TAP CHANGER

Don L. Colangelo, Sharon, and Robert J. Manes, Wheatland, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1970, Ser. No. 90,258

Int. Cl. H01f *21/12*

U.S. Cl. 336—94 **6 Claims**



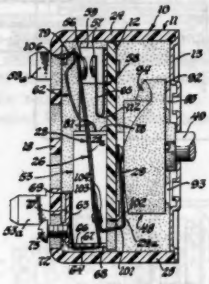
A distribution transformer having a metallic casing comprising a fluid compartment and a terminal compartment separated by a common wall. Core-winding means including a low-voltage coil and a high-voltage coil having a plurality of taps thereon located in the fluid dielectric compartment. A tap changer attached to the fluid dielectric compartment side of the common wall. The tap changer has a shaft extending through the common wall with an O-ring seal to prevent fluid dielectric from seeping into the terminal compartment. An operating member is attached to the shaft and located in the terminal compartment for operating the shaft to move a movable contact member to engage fixed contacts located inside the fluid dielectric compartment to selectively connect the taps on the high-voltage coil to the casing. An indicator is located in the terminal compartment to indicate which terminal in the fluid dielectric compartment is connected to the movable contact element.

3,636,490

THERMAL CYCLING HEAT RANGE SWITCH WITH WIPING ACTION

Nelson J. Pansing, Clayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1970, Ser. No. 93,689
Int. Cl. H01h *37/60, 61/08, 71/22*
U.S. Cl. 337—93 3 Claims



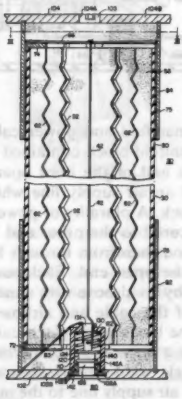
A thermal cycling switch device including a bimetallic current carrying cycling blade operable to control the rate of energization of an electric heater particularly of the type used in range surface units. A front contact on the free end of the self-heated cycling blade is constantly biased in a contact open direction by cam loading means, A thrust spring operates on the free end of the cycling blade to apply a snap action force in both the make and break directions depending upon the thermal condition of the cycling blade. The switch employs a resiliently mounted back contact supporting blade having a radius arm substantially less than the cycling blade wherein wiping action is attained between the contacts to insure the snap action of the switch.

3,636,491

CURRENT-LIMITING FUSE

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,598
Int. Cl. H01h *85/12, 85/30*
U.S. Cl. 337—244 10 Claims



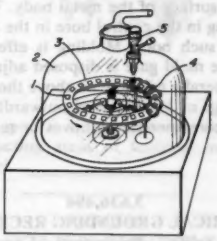
A fuse comprising a generally tubular, electrically insulating casing having a pair of terminal members or ferrules disposed adjacent to the opposite ends of said casing. One or more fusible elements is disposed in the casing and connected between the terminal members. An additional fuse wire or restraining wire is disposed in the casing and connected between said terminal members with means provided adjacent to one end of the casing which responds to the melting of the fusible element or elements to change position. A pair of electrically conducting ring members are disposed at the opposite ends of the casing to support a plurality of fusible elements, where provided, in radially and circumferentially spaced positions inside the casing.

3,636,492

SINTERED SEMICONDUCTOR FILM AND METHOD OF MANUFACTURING SAME

Toshio Yamashita; Tadao Ohtani, both of Hirkata-shi; Manabu Yoshida, Moriguchi-shi; Saburo Kitamura, Kyoto, and Hideaki Murakami, Ibaragi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 5, 1968, Ser. No. 750,315
Int. Cl. B05b *13/02*; H01c *7/08*
U.S. Cl. 338—15 5 Claims



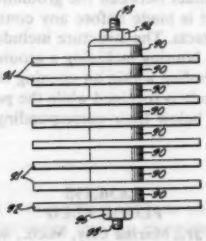
A method of manufacturing a sintered film composed of cadmium sulfide, cadmium selenide, etc. which is free from cracks and pinholes, and a semiconductor element having sandwich-type electrode structure comprised of the sintered film.

3,636,493

RESISTOR WITH HEAT DISSIPATING MEANS

Richard E. Caddock, 640 Sandalwood Court, Riverside, Calif.

Continuation-in-part of application Ser. No. 847,783, July 18, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 820,538, Apr. 30, 1969, now abandoned. This application May 25, 1970, Ser. No. 40,281
Int. Cl. H01c *1/08*
U.S. Cl. 338—52 45 Claims



A disc-shaped metal body or base of anodized aluminum has an upstanding central post, the body and post being centrally bored to receive a bolt for stacking or mounting of the resistor. A ceramic wafer or washer is seated on the body and around the post, and has a resistive film provided on the

upper surface thereof. The configuration of the resistive film is such that the temperature generated in the central region of the resistor, relatively adjacent the post, is greater than is the temperature generated remote from the post, thus setting up a highly effective thermal gradient which maximizes the dissipation of heat from the resistor. Terminal lugs or leads connect to the resistive film and extend outwardly generally in the plane of the washer, there being a connection between each lug and the washer by means of a rivet the ends of which are embedded in thermosetting synthetic resin. All of the components are maintained protected from the environment by a mass of thermosetting synthetic resin which extends upwardly from the film and surrounds the post, the upper surface of the resin being flush with the top of the post and parallel to the bottom of the metal body, in order to permit stacking of the resistors. The body and/or central post incorporate undercut means to prevent axial and rotational movement of the resin relative to the body, despite high thermal and other stresses.

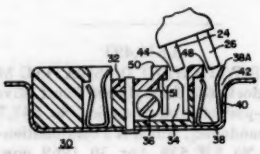
In accordance with the method, the preassembled body and ceramic washer (bearing the resistive film) are mounted as inserts in a mold cavity the depth of which is approximately equal to the distance between the upper end of the post and the bottom surface of the metal body. Thus, despite the absence of a plug in the central bore in the post, no molding material enters such bore. Molding is effected by transfer molding, and the mold gate is disposed adjacent the parting line and also generally adjacent or above the ceramic washer. The terminal lugs or leads extend outwardly from the mold cavity through corresponding grooves or recesses located at the parting line.

3,636,494

ELECTRICAL GROUNDING RECEPTACLE

Clarence M. Smith, Bridgeport, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1970, Ser. No. 26,197
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **2 Claims**



An electrical grounding receptacle is provided with means to insure that, upon insertion of a conventional three-pronged plug, contact between the grounding prong and the grounding contact is made before any contact can be made to the power contacts. The structure includes female contact elements within a housing including a grounding contact that has a portion extending within an opening of the front face in which the plug blade is received while the power contacts are disposed entirely below their corresponding openings in the front face.

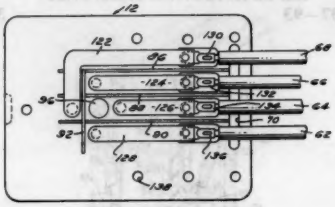
3,636,495

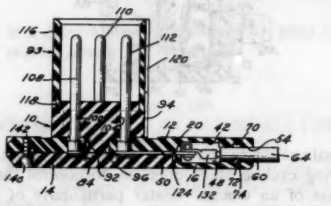
FLOOR PLUG

Frank J. Forsyth, Jr., Marine City, Mich., assignor to Jack A. Frost, Detroit, Mich.

Filed Apr. 9, 1970, Ser. No. 26,854
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 P **8 Claims**

An electrical plug for three-phase, high-power electrical applications is provided. The plug is adapted for use in connection with a floor receptacle and has a generally flat, thin casing to provide a low profile on the floor. Safety means are provided within the casing to prevent electrical flashover between the terminals and to prevent the ingress of moisture into the casing. The casing encloses electrical terminals which include relatively thin flat terminal bars received in grooves in the casing, which is made in separable halves,





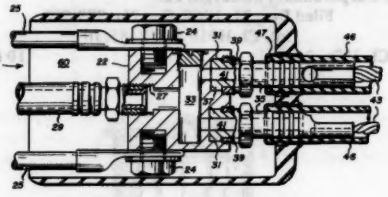
from which extend terminal elements which project exteriorly of the casing for connection to an electrical receptacle. A socket is provided on the casing to act as additional support for the terminal elements and to provide an enclosure therefor.

3,636,496

AIR AND POWER CABLE APPARATUS

Henry H. Jenkins, 864 West Hacienda Drive, Corona, Calif.

Filed Sept. 8, 1969, Ser. No. 855,959
Int. Cl. H01r *7/16*
U.S. Cl. 339—15 **4 Claims**



An air-cooled manifold and power cable apparatus comprising a metal manifold block contained in a rubber insulating boot with one end of the boot open to receive power supply cables and an air supply line which are attached to one end of the block. A plurality of power cable and airhose assemblies are secured to the other end of the block within the boot and extend therefrom through holes in the boot in an end opposite the open end. Each assembly comprises a cable surrounded by an airhose with a metal connector holding a given end of the cable and airhose together and connecting same to the block in an electrical and fluid conducting manner and in a manner which permits same to be connected at any angle until fixedly secured. Passages in the block connect the air supply line to the metal connector. The other end of the assembly is secured by a similar metal connector which can be fixedly connected to a work device. The holes or areas around the holes in the boot are so constructed that the airhose and cable assemblies can be easily pulled out of the boot but are difficult to pull into the boot.

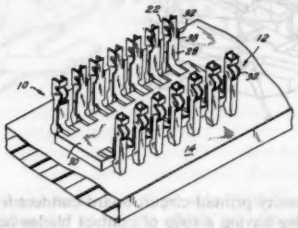
3,636,497

ELECTRICAL CONNECTOR AND ASSEMBLY

Clyde Thomas Carter, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 6, 1970, Ser. No. 9,304
Int. Cl. H05k 1/02
U.S. Cl. 339—17 CF 7 Claims

A connector assembly in the form of a staked array of post connectors. utilizing such connectors, electrical components, such as integrated circuit packages, can be loosely secured in place by automated means for subsequent soldering procedures. The connectors are best shaped into a modified U-shaped beam with one end adapted for point-to-point wiring and the other end having two oppositely facing longitudinal channels for receiving in one of such channels a lead from the component. The component being loosely secured



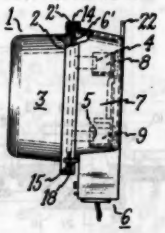
on the baseboard by at least two of its leads between a respective pair of such connectors. The component leads extend up substantially parallel to respective connectors and are secured in the facing channels of the connectors by projections from the sides of said channels which engage the industry standardized shoulders on the component leads at the appropriate height.

3,636,498

ADAPTER ASSEMBLY FOR MOUNTING A WATTHOUR METER AND LOCKING MEANS THEREFOR

Alexander M. McQuarrie, Rochester, N.H., assignor to General Electric Company

Filed July 30, 1970, Ser. No. 59,429
Int. Cl. H02b 9/00
U.S. Cl. 339—39 9 Claims



A unique locking means is provided for a watthour meter adapter assembly to prevent a three-wire meter from being removed from the assembly and inadvertently replaced with a two-wire meter which would not perform the desired metering function.

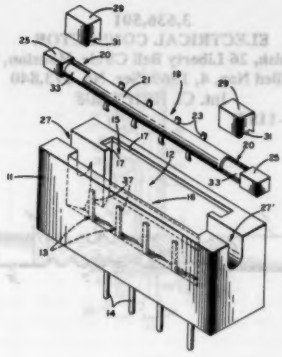
3,636,499

ZERO FORCE CONNECTOR

Paul K. Winklebleck, North Warren, Pa., assignor to Sylvania Electric Products Inc.

Filed Aug. 28, 1970, Ser. No. 67,746
Int. Cl. H01r 13/54
U.S. Cl. 339—75 MP 9 Claims

A printed circuit board connector utilizing a rotatable cam having spring contacts molded therein, the cam being positioned within a channel which is aligned with and substantially parallel to a rectangular slot also located within the connector. Upon insertion of the circuit board into the rectangular slot, the cam is rotated, thus providing electrical



contact between specific areas on the circuit board and corresponding contacting areas of terminal members located within the channel.

3,636,500

CLIP-TYPE TERMINAL

William S. Sedlacek, Chicago, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Mar. 14, 1969, Ser. No. 807,336
Int. Cl. H01r 9/08
U.S. Cl. 339—97 R 12 Claims

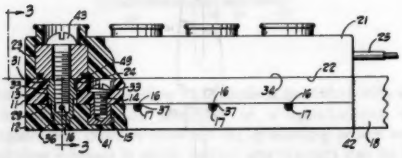
A clip terminal is made from resilient strip stock. It has a notch formed at its upper end, an elongate aperture spaced below the notch, and is slitted between the bottom of the notch and top of the aperture to provide a slot which separates the body portion into two arms. The arms are prestressed apart by an upsetting operation. The bottom of the notch is rounded and the notch edges intersect the side edges of the slot to provide substantially 90° sharp corner edges. The width of the slot at the sharp corner edges is somewhat less than the diameter of the solid conductor

which is to be forced therebetween. Forcing an insulated wire between the sharp corner edges causes them to cut a notch in the insulation and bare the surface of the conductor. The lower portion of the notch is of a width sufficiently small so that with larger wire sizes, the insulation bearing on the notch edges will flex the arms outwardly to increase the width of the slot.

3,636,501
ELECTRICAL CONNECTOR
Donald K. Walsh, 26 Liberty Bell Circle, Houston, Tex.
Filed Nov. 4, 1969, Ser. No. 873,840
Int. Cl. H01r *11/08*
U.S. Cl. 339—118 R **9 Claims**

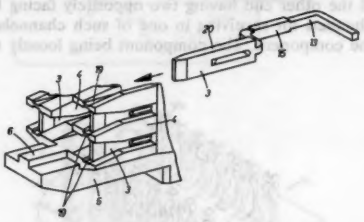
An electrical connector comprising a generally cylindrical electrally conductive rod having an axial bore therein forming a tube open at at least one end and having walls at least a portion of which are shaped in the form of a bellows. The bore is adapted to receive at least one electrical conductor and in its preferred form the hollow portion of the rod is filled with an electrically conductive liquid which is relatively incompressible as, for example, mercury.

3,636,502
CONNECTOR FOR AIRCRAFT WINDSHIELDS
Joseph M. Wallace, 5898 Blackwelder Street, Culver City, Calif.
Filed Sept. 10, 1969, Ser. No. 856,726
Int. Cl. H01r *9/10*
U.S. Cl. 339—198 R **18 Claims**



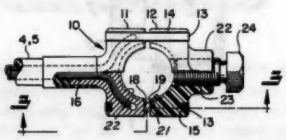
A connector is provided for the leads from a resistance-type windshield heater embedded in the windshield in order to facilitate connection of these leads to a power supply. The connector is formed of a pair of insulating blocks with openings therein making a loose fit with metallic connector inserts, each having a transverse opening designed to receive the bare end of a heater lead and registering with a transverse groove in one of the blocks in order that soldered connections may readily be made. Accordingly, a block containing the leads from the power supply may be attached to the connector block of the present application with the terminals in the power supply terminal block in positive contact with the metallic inserts in order to avoid any possibility of arcing or poor electrical connection between the inserts and the terminals in the power supply connector block.

3,636,503
PRINTED CIRCUIT BOARD CONNECTOR
Johannes Bernutz, Ludwigsburg-Hoheneck, and Erich Klivar, Ditzingen, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,045
Claims priority, application Germany, Oct. 12, 1968, P 18 02 821.2
Int. Cl. H01r *13/64*; H05k *1/06*
U.S. Cl. 339—217 S **1 Claim**



A high-density printed circuit board connector containing a first housing having a strip of contact blades having a plurality of rows of contact blades within the housing. A body of insulating material within the first housing contains at least a plurality of rows of parallel ribs extending between guide members. The ribs are arranged so as to form guide grooves with the narrow sides of said contact blades being guided along its length and being detachably retained in position. A second housing contains a strip of contact springs formed of forked contact springs electrically inserted in the housing of the strip of contact springs. The forked contact springs contain locking springs for insertion in a contact receptacle in said second housing and are detachably locked therein.

3,636,504
NONCORROSIVE BATTERY CABLE CONNECTOR
Robert B. Applegate, 4883 Grace Avenue, North Olmsted, Ohio
Filed Jan. 19, 1970, Ser. No. 3,759
Int. Cl. H01r *11/26*
U.S. Cl. 339—228 **11 Claims**

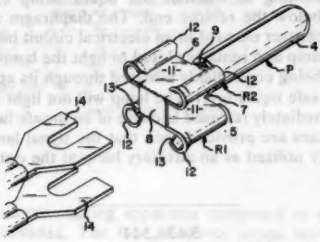


A noncorrosive battery cable connector including two parts secured together by nonmetallic bands and having cooperating tapered notches in opposing faces for receipt of the correspondingly tapered terminal posts of a battery. One of the parts is made of lead and contains the conductor for the battery cable whereas the other part is made of a noncorrosive material such as plastic. In one form of the invention, a plastic screw has threaded engagement with the other part and when tightened draws the one part into tight gripping engagement with the terminal post; in another form of the invention, noncorrosive wedges are used for that purpose.

3,636,505
ELECTRICAL PIN WITH TAB RECEPTACLES AND METHOD OF MAKING SAME

Edward Michael Poltonavage, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 11, 1970, Ser. No. 18,436
Int. Cl. H01r 13/12
U.S. Cl. 339—256 SP 7 Claims

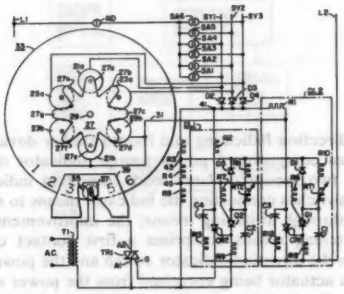


A stamped and formed pin is provided with tiered receptacles at an inner end of the pin which are also stamped and formed. A tab or split ring is provided at the free end of the receptacle having an insertion axis parallel with the seam of the pin to stabilize the receptacles and maintain them in a rigid position as well as keeping the pin in a resilient condition.

3,636,506
CONTROL UNIT FOR PROJECTION-TYPE POSITION INDICATOR

Andrew F. Kirsch, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1969, Ser. No. 852,834
Int. Cl. B66b 3/02; G08c 13/00, 19/44
U.S. Cl. 340—21 6 Claims

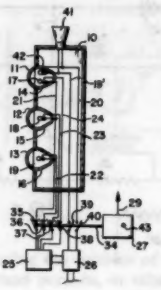


A control unit for use with a projection-type digital display device blanks the display prior to any change in the presentation. A timer delays advancement of the indicia until the expiration of a predetermined interval after receipt of a step signal to allow sufficient time for the display to be completely extinguished. Another timer reactivates the display upon the expiration of a longer predetermined interval, by which time the indicia has assumed the advanced position.

3,636,507
TRAFFIC SIGNAL

Eugen Harsanyi, Trierer Strasse 47, 5, Cologne, Germany

Filed Nov. 18, 1969, Ser. No. 877,799
Claims priority, application Germany, Nov. 26, 1968, P 18 10 966.5
Int. Cl. G08g 1/095
U.S. Cl. 340—32 6 Claims

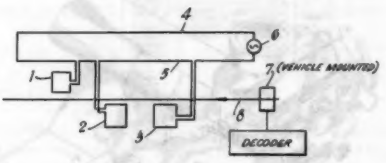


An additional light bulb arranged in each red or yellow lamp of a traffic light is energized through a radio-operated switch by an approaching emergency vehicle. The switch also interrupts the normal intermittent current supply to the red, yellow, and green lamps. Movement of the emergency vehicle is facilitated by the stopping of all traffic along its route not only in transverse directions, but also in the direction of movement of the vehicle and in the opposite direction.

3,636,508
SYSTEMS FOR TRANSMITTING INFORMATION BETWEEN A RAILWAY TRACK AND MOVING TRAIN

Harry Heggie Ogilvy, Middlesex, and Clive Valentine Smith, Kempston, both of England, assignors to British Railways Board

Filed Feb. 18, 1970, Ser. No. 12,360
Claims priority, application Great Britain, Feb. 21, 1969, 9,533/69
Int. Cl. B61l 1/00
U.S. Cl. 340—47 6 Claims



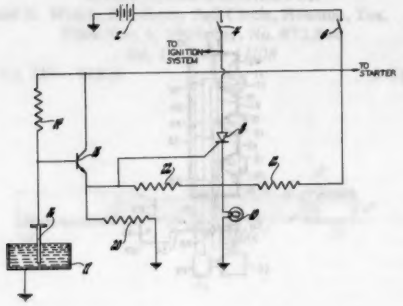
A system for transmitting information between a trackway and a moving vehicle and of the kind in which one or more coils laid on the trackway become inductively coupled with aerial means on the vehicle, the bit of information transmitted by the or each coil being distinguished as "1" or "0" (using conventional binary notation) by utilizing the antiphase relationship of the flux parallel to the plane of the turn(s) of the coil associated with the two opposite sides of the coil. An additional bit of information can be derived from each coil by utilizing the flux perpendicular to the plane of the turn(s) of the coil.

3,636,509

VEHICLE LOW COOLANT LEVEL INDICATING DEVICE

Burton W. Breece, Flint, and Raymond Edwin Summerer, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1970, Ser. No. 19,924
Int. Cl. B60q 1/00; G08b 21/00
U.S. Cl. 340—59 3 Claims



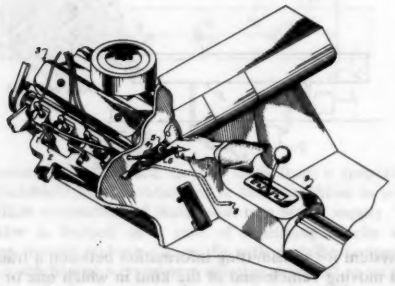
A device for indicating low coolant level in a vehicle radiator when the engine of the vehicle is started, for giving a continuous indication of such condition and for automatically indicating the proper working condition of the indicator device. The vehicle starter switch supplies battery voltage simultaneously to the indicator for testing purposes and to a circuit which modifies the voltage in accordance with the liquid level. A voltage corresponding to low liquid level triggers a silicon controlled rectifier which connects the indicator to the ignition switch and supplies it with battery voltage after the starter switch is opened.

3,636,510

PUSHBUTTON LIQUID LEVEL CHECKING APPARATUS FOR VEHICLES

Dewey E. Winfield, 2532 West Wethersfield Road, Phoenix, Ariz.

Filed Feb. 11, 1971, Ser. No. 114,562
Int. Cl. B60q 1/00
U.S. Cl. 340—59 6 Claims



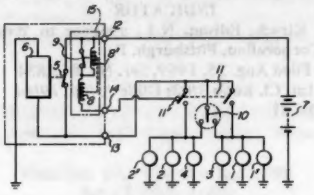
In order to provide means for remotely checking for a minimum acceptable liquid level, such as the oil level in an engine crankcase or automobile transmission, one end of a conduit is fixed such that it opens below the minimum acceptable liquid level while the other end of the conduit is coupled to apparatus which, when activated, sets up a suction within the conduit which will be released immediately if the liquid level is too low and will be controllably released if the liquid level exceeds the minimum according to whether the open end of the conduit is above or below the liquid level. The apparatus coupled to the conduit includes a cylindrical housing containing a pliable bulb, a Bellofram or the like, disposed adjacent a pushbutton assembly which, when depressed, forces air out of the bulb and the conduit. When the pushbutton is released, the suction set up in the conduit will either be controllably released through a perforated diaphragm or immediately released at the remote end of the tubing according to whether the liquid being checked is above or below the remote end. The diaphragm also functions as a contact element in an electrical circuit including an indicator lamp and remains closed to light the lamp while the suction is being controllably released through its aperture indicating a safe liquid level. The lamp will not light if the suction is immediately released because of an unsafe liquid level. Switch means are provided such that the signal lamp can be temporarily utilized as an auxiliary lamp at the option of the operator.

3,636,511

DIRECTION INDICATING AND EMERGENCY SWITCH DEVICE FOR AUTOMOBILES

Yasuhiko Sakurai, Kariya-shi, Japan, assignor to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Filed Sept. 11, 1969, Ser. No. 857,013
Claims priority, application Japan, Oct. 8, 1968, 43/87879; Apr. 25, 1969, 44/38434
Int. Cl. B60q 1/38
U.S. Cl. 340—81 2 Claims

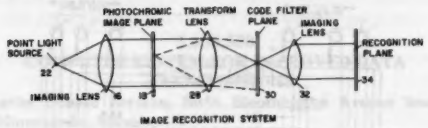


In a direction indicating and hazard flasher device for automobiles comprising a power source, indicator means, including two groups of lamp loads, direction indicator and hazard switches connecting the indicator means to the power source through switching means, the improvement wherein the switching means comprises a first contact connected between the direction indicator switch and the power source, a switch actuator being energized from the power source for periodically actuating the first contact, a series circuit of a second normally closed contact and a current winding, the series circuit being connected in parallel with the first contact, and a voltage winding connected in parallel with the second normally closed contact, the second normally closed contact being opened by the current winding only when a current larger than a predetermined value is carried therethrough to either one of the lamp loads and being held in the open state by the voltage winding in cooperation with the current winding, whereby the lamp load is not flashed if the current through the current winding is smaller than the predetermined value due to some failure thereof.

3,636,512
OPTICAL SYMBOL RECOGNITION SYSTEM

Louis J. Edwards, Salt Lake City, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 4, 1970, Ser. No. 8,499
Int. Cl. G06k 9/08; G01n 21/30; G06k 7/12; G02f 1/28
U.S. Cl. 340—146.3 F 7 Claims

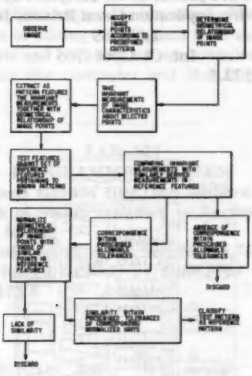


An automatic reading apparatus composed of three main parts is provided. The first performs image formation on photochromic material, the second performs image recognition by way of optical spatial filtering and the third part of the system converts the recognized image into useable readout.

3,636,513
PREPROCESSING METHOD AND APPARATUS FOR PATTERN RECOGNITION

Glenn E. Tisdale, Towson, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1969, Ser. No. 867,250
Int. Cl. G06r 9/00
U.S. Cl. 340—146.3AC 20 Claims

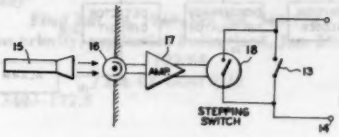


Features are extracted from a two-dimensional image for subsequent classification of patterns within the image according to correspondence between the extracted features and reference features in a set extracted previously from known patterns. In extracting the features, measurements are first taken of observed characteristics of the image about two or more predefined points in the image, these measurements being chosen to be invariant regardless of orientation, scale, and position of the pattern in the image. The measurements, along with data regarding relative positions of the selected points, constitute the features from which eventual pattern recognition may be achieved.

3,636,514
METHOD OF CONDUCTING NOCTURNAL POLICING INSPECTIONS BY CONTROLLING INTERIOR LIGHTS OF BUILDINGS

Louis M. Burgess, 6026 North 9th Street, Arlington, Va.

Filed Dec. 3, 1969, Ser. No. 881,723
Int. Cl. H04q 1/00, 5/00, 9/00
U.S. Cl. 340—147 7 Claims

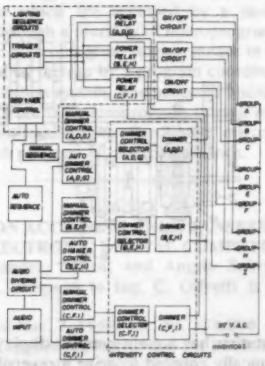


A method of inspecting the interior of a building for the presence of unauthorized persons, or other irregularities, at night is disclosed. A patrolman or night watchman is positioned at a vantage point exterior to the building for observing its interior through a window and is enabled to turn on the lights inside the building to fully observe the interior.

3,636,515
ELECTRONIC SOUND RESPONSIVE LIGHTING SYSTEM AND CONTROL

George C. Smith, 107 West Hill, Cincinnati, Ohio

Filed Sept. 10, 1969, Ser. No. 856,703
Int. Cl. H04q 1/45, 1/46
U.S. Cl. 340—148 6 Claims

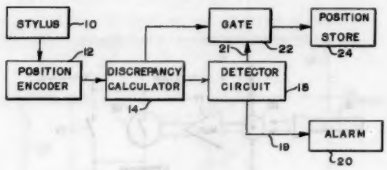


Lighting system having one or more illuminated panels, and an electronic control adapted to vary the intensity, and the sequence or arrangement of illumination of the panel. Each panel includes a plurality of individual light bulbs interconnected in a predetermined pattern. The electronic control provides for variations in the sequence or arrangement of illumination of the individual light bulbs, as well as variations in the intensity of their illumination, all in accordance with the input. The input may selectively be either manual or electronic.

3,636,516
POSITION ERROR SENSOR

Thomas C. Stockebrand, Boxboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed July 11, 1969, Ser. No. 841,087
Int. Cl. G06g 7/04; G06k 11/00
U.S. Cl. 340—149 8 Claims

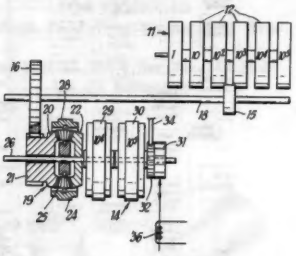


An operator manually selects a point on a parts drawing where a machining operation is to be performed. The location of the selected point is encoded and the corresponding position data compared with stored position data of the nearest grid intersection corresponding to the point where the machining operation is actually to be performed. If the operator selected point satisfies a predetermined tolerance, the stored grid intersection position data is entered into a separate store. If not, an alarm is sounded, and the operator reselects the point.

3,636,517
METERING STATIONS

Terence Arthur Stoten, Luton, England, assignor to Kent Meters Limited, Luton, England

Filed Dec. 15, 1969, Ser. No. 885,096
Int. Cl. G01d 4/00
U.S. Cl. 340—150 6 Claims

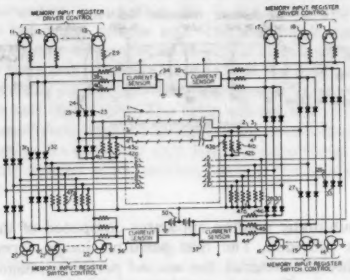


A meter station has a main counter displaying an all-time total mechanically coupled to drive a reversible counter the reading of which is also displayed. The drive is through a differential gear device incorporated in the first decade wheel of the reversible counter. Pulses supplied from and counted at a remote interrogator station reset the reversible counter by means of a solenoid lever mechanism. The pulse supply is stopped by a zero switch opened by the reversible counter when the decade wheels show between zero and minus one so that the lever mechanism will complete its last cycle even though the reversible counter is being driven by the main counter. In a modification, the solenoid lever mechanism and the counter at the interrogator station operate alternately in half-cycle steps so that the interrogation proceeds at the operating speed of the mechanism resetting reversible counter.

3,636,518
ARRANGEMENT FOR DETECTING SHORTED DIODES IN SELECTION MATRICES IN CORE MEMORIES

John G. van Bosse, Mt. Prospect, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 18, 1970, Ser. No. 20,715
Int. Cl. H04q 3/00, 5/00
U.S. Cl. 340—166 3 Claims

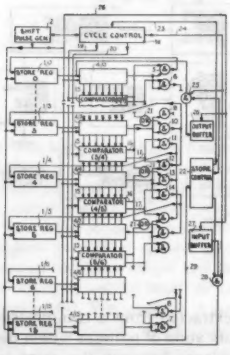


In a selection matrix of a memory circuit, diodes and transistors are connected to an intermediate source of voltage through resistors and sensors. Reverse voltage is thereby applied to the diodes and transistors except when they are selected for operation, and an indication of current flow by the sensors while reverse voltage is applied shows that either a diode or transistor is shorted.

3,636,519
INFORMATION PROCESSING APPARATUS

Frederick George Heath, 90 Northcote Road, Bramhall, Cheshire, England

Filed Jan. 6, 1970, Ser. No. 984
Claims priority, application Great Britain, Jan. 8, 1969, 1,082/69
Int. Cl. G06f 7/06
U.S. Cl. 340—172.5 10 Claims



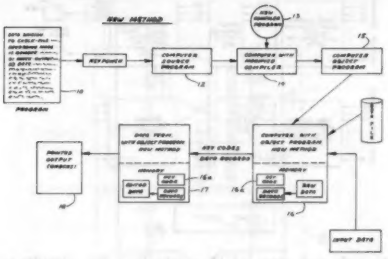
Apparatus is shown for maintaining a group of items of data, each held in a separate section of a store in a predetermined order, e.g. to form a queue of the items by reference to priority designations respectively contained within the items, under conditions, for example, where items may be removed from the group and replaced by others. The items are repeatedly circulated respectively each through a

separate short register which is capable of containing the designation. Comparators are connected between those short registers adjacent one another in order of the priority queue. On each circulation alternate ones of the comparators are rendered effective to cause adjacent pairs of the items to be ordered on reentry into the store sections according to their mutual priority designations, the comparators rendered effective on successive circulations being alternately interlaced so that the entire group is brought into designation order. Provision is made for removal of items from, and entry of new items into, the store.

3,636,520
COMPUTER SYSTEM FOR IMPROVED DATA TRANSMISSION

Charles Donald Berteau, 8056 Bloomington Avenue South, Minneapolis, Minn.

Filed Feb. 5, 1970, Ser. No. 8,779
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 **1 Claim**

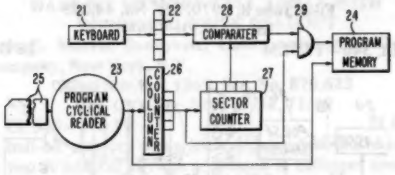


A method for the movement of information within data systems utilizing a digital computer and remote terminal transmission facilities to provide improved efficiency by shifting the function of editing certain data from the computer to remote terminals and reducing the transmission time of data records between the computer and the remote data terminals.

3,636,521
PROGRAMMING SYSTEM

Harry L. Wallace, Garden City, and Richard M. Williams, Livonia, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 21, 1970, Ser. No. 65,763
Int. Cl. G06c 21/04; G06f 9/04
U.S. Cl. 340—172.5 **14 Claims**

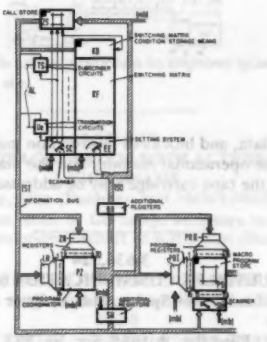


A system for selecting and entering a program into the memory of an electronic digital computer in which one of a plurality of programs is selectable from a keyboard. Program routines that individually correspond to a particular key on the keyboard are contained as binary information on sectors of a cyclically read medium. The information on the medium corresponding to the selected key is entered into the computer memory and stored as a program.

3,636,522
PROGRAM CONTROL MECHANISM FOR A LONG DISTANCE COMMUNICATION EXCHANGE INSTALLATION CONTROLLED BY A CONCENTRATEDLY STORED PROGRAM

Klaus Buschmann, Munich, and Walter Meyer, Alling, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 24, 1969, Ser. No. 793,714
Claims priority, application Switzerland, Jan. 25, 1968, 1192/68
Int. Cl. G06f 9/12
U.S. Cl. 340—172.5 **18 Claims**



A program control mechanism for a data exchange installation controlled by a program stored in concentrated fashion. The program control mechanism includes a microprogram storage means which contains lists of microcommands which are accessed by a macroprogram storage means through a plurality of microprogram addresses contained in the macroprogram storage means in response to information applied thereto by a program coordinator from a requesting installation system. The accessed microcommands are transmitted from the microprogram storage means to the requesting system to allow the execution of micro-operations required for each program of macrocommands.

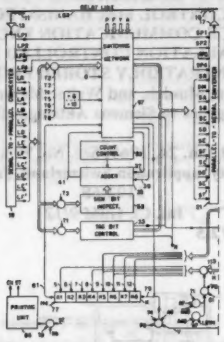
3,636,523
INFORMATION ACCESSING AND TRANSFERENCE IN AN ELECTRONIC DIGITAL COMPUTER

Giovanni De Sandre, Milan, and Angelo Subrizi, Torino, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Torino, Italy

Filed Nov. 7, 1969, Ser. No. 874,898
Claims priority, application Italy, Nov. 11, 1968, 53830 A/68
Int. Cl. G06f 7/22, 9/12
U.S. Cl. 340—172.5 **11 Claims**

An electronic computer having an operational memory formed by a delay line and means for interpreting bits stored on the delay line as a plurality of storage registers in which the program instructions are transferred one at a time to an instruction register for execution. The computer includes means responsive to a jump instruction in the instruction register for jumping to a subroutine beginning with a corresponding reference instruction and for converting the jump instruction to the corresponding reference instruction. After executing the subroutine the computer is responsive to an instruction recorded at the end thereof for jumping back to the converted jump instruction and reconverting it to a jump instruction. Also included in the computer are means respon-

sive to a predetermined instruction for interpreting the address portions of following instruction as indirect addresses. A magnetic tape cartridge is used for bulk storage of program and data, and blocks of information may be transferred between the operational memory and the magnetic tape. Locations on the tape cartridge may be addressed directly or indirectly.

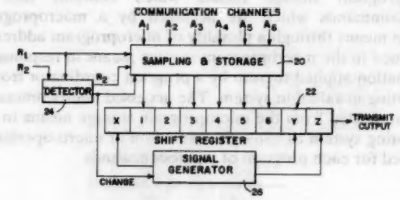


3,636,524

MULTIPLEX COMMUNICATION SYSTEM

Grahm Holland, Silver Spring, Md., assignor to Tel-Tech Corporation

Filed Dec. 8, 1969, Ser. No. 883,206
Int. Cl. H04j *3/00*
U.S. Cl. 340—172.5 **30 Claims**



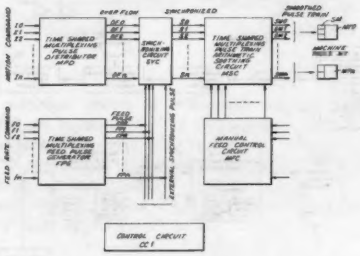
In the multiplex transmission of data and control information, data information from a plurality of communication channels is continuously sampled at a first repetition rate. The sampled data information is transferred into serial arrangement at a second repetition rate, which exceeds the first repetition rate. The second repetition rate provides a series of time intervals for the transmission of data information. The serially arranged data information is transmitted in the form of transmission time frames during the time intervals of the series established by the second repetition rate. Since the second repetition rate exceeds the first repetition rate, there periodically appears an open time interval in the series of time intervals established by the second repetition rate which is not required for the transmission of data information. When the open time interval occurs, the transmission of data information is temporarily discontinued and a transmission time frame containing control information from the communication channels is transmitted during the open time interval. A set of identification signals is inserted into each transmission time frame, and the set of identification signals is varied in accordance with a predetermined signal pattern during the transmission of data information to identify transmission time frames containing data information. When control information is transmitted, the set of identification signals is altered from the predetermined signal pattern to identify a transmission time frame which contains control information.

3,636,525

TIME-SHARED NUMERICAL CONTROLLER FOR SIMULTANEOUS CONTROL OF A PLURALITY OF MACHINE TOOLS

Seiuemon Inaba; Norito Yoshitake, both of Kawasaki-shi; Ryoji Imazeki, Yokohama-shi, and Yoshinori Kozai, Kunitachi-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1969, Ser. No. 887,619
Claims priority, application Japan, Dec. 23, 1968, 43/94721
Int. Cl. G05b *19/18*; G06f *15/46*
U.S. Cl. 340—172.5 **4 Claims**


TIME SHARED MULTIPLEXING PULSE DISTRIBUTOR MPD
SYNCHRONIZING CIRCUIT SYC
TIME SHARED MULTIPLEXING PULSE TRAIN ARITHMETIC OPERATING CIRCUIT MSC
TIME SHARED MULTIPLEXING FEED PULSE GENERATOR FPG
MANUAL FEED CONTROL CIRCUIT MFC
CONTROL CIRCUIT CC

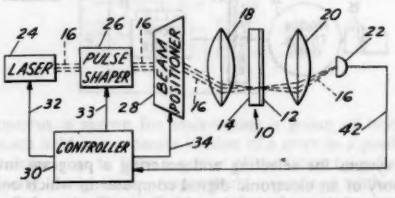
A time-shared numerical controller for simultaneously controlling machine tools in movement along a plurality of axes comprises a time-shared multiplexing pulse distributor having a memory. An input coupled to the memory of the pulse distributor writes into the memory command data and the results of an arithmetic operation relating to the magnitude of movement of a plurality of movable axes to be controlled. An output coupled to the memory reads out from the memory the command data and the results. A selecting circuit coupled to the memory selects the place of write-in and readout of the data to and from the memory. A time-shared multiplexing pulse train arithmetic circuit coupled to the pulse distributor provides arithmetic operations and pulse distribution in common for the plurality of axes. An output coupled to the arithmetic circuit separates and provides output pulses corresponding to the plurality of axes.

3,636,526

INFORMATION-RECORDING SYSTEM EMPLOYING AMORPHOUS MATERIALS

Julius Feinleib, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed June 8, 1970, Ser. No. 44,225
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **26 Claims**



The systems disclosed herein record information on an amorphous thin film by applying light to selected regions of

the film. The temperature in these regions increases to the point where the film softens. Upon removal of the light the film returns to the solid phase leaving enclosed voids in the film. The information can be read from the amorphous film by irradiating the film with light of a wavelength in the order of magnitude of the size of the voids. The light is scattered or absorbed by multiple reflections produced by the voids allowing the selected regions to be readily detected. In order to erase the information the amorphous film is heated to the softening point, but not to a temperature as high as the temperature reached during recording. The softened amorphous film flows into the voids erasing the stored information.

3,636,527

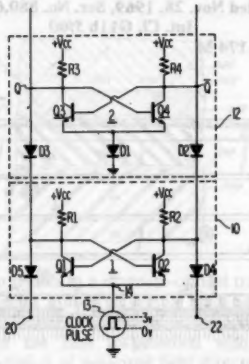
STORAGE CIRCUIT

Borys Zuk, Somerville, N.J., assignor to RCA Corporation

Filed Aug. 21, 1970, Ser. No. 65,947

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 FF **9 Claims**



A first circuit which includes a flip-flop driven by a clock pulse source and a second circuit which includes a flip-flop coupled to the first circuit by diodes. In response to a clock pulse, the first circuit flip-flop is disabled, the diodes decouple the second circuit flip-flop from the first circuit, and a data bit signal manifestation applied to the first circuit causes a voltage condition to be established there indicative of the value of the bit. Upon termination of the clock pulse, the two flip-flops assume stable states dependent on the value of the data bit.

3,636,528

HALF-BIT MEMORY CELL ARRAY WITH NONDESTRUCTIVE READOUT

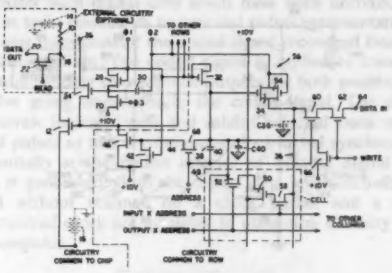
Dennis E. Morris, Sunnyvale, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,622

Int. Cl. G11c *7/00, 11/34, 11/40*

U.S. Cl. 340—173 FF **11 Claims**

A half-bit memory array featuring nondestructive reading uses two X address circuits addressed at different times and coupled by an inverter to read the memory element in a first portion of the operational cycle, and refresh it in a second portion of the operational cycle, without disturbing the gate electrode potential of the memory element at any time during the cycle, and without the refresh signal level being dependent upon the read signal level. Writing is accomplished by disabling the inverter to prevent transfer of the read information to the refresh circuit and substituting in its place a low-impedance data input signal. Fast switching is accomplished by reducing charge transfer operations to a minimum,



and the circuit is entirely ratioless to improve speed of operation and circuit size.

3,636,529

DRUM STORAGE SYSTEM WITH ALTERNATING LIGHT BEAMS

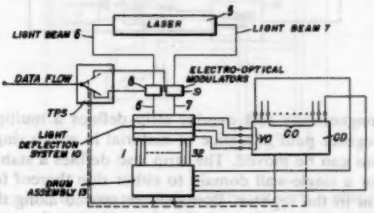
Manfred Borner, Ulm (Danube), and Stefan Maslowski, Aufhein, Neu-Ulm, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Filed Feb. 13, 1969, Ser. No. 798,882

Claims priority, application Germany, Feb. 13, 1968, P 15 74 490.8

Int. Cl. G11c *13/04*; G01d *15/14, 15/28*

U.S. Cl. 340—173 LM **9 Claims**



In a data system having a large store capacity and short access time a rotating drum is provided the surface of which is covered with a recording material which changes color under the influence of light beams. Other features relate to arrangements for associating the data flow to a plurality of light beams.

3,636,530

NONVOLATILE DIRECT STORAGE BISTABLE CIRCUIT

John G. Mark, Pasadena, and Andrew C. Tickle, Chatsworth, both of Calif., assignors to Litton Systems, Inc.

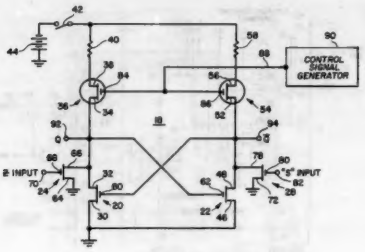
Filed Sept. 10, 1969, Ser. No. 866,058

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 FF **18 Claims**

A bistable electrical circuit incorporating semiconductor-insulator devices as load resistors in the amplifying (switching) sections of the bistable circuit. The semiconductor-insulator devices exhibit memory properties, and the binary state of the flip-flop at the time of application of a write

signal is nonvolatilely stored thereby. Upon application of a read signal the circuit is initialized to the same state as existed during the writing mode of operation. Data storage is maintained in the absence of all applied power.



3,636,531

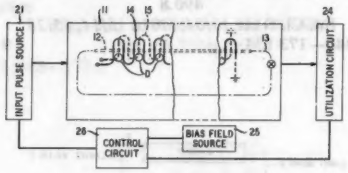
DOMAIN PROPAGATION ARRANGEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 24, 1970, Ser. No. 49,273

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **12 Claims**



A magnetically soft overlay strip defines a multiposition shift register path in a slice of material in which single-wall domains can be moved. The strip also defines a stable location for a single-wall domain to either side thereof for each position in the register. Domains are moved along the path by consecutively offset fields operative simultaneously to both sides of the strip, thus achieving a two-state shift register.

3,636,532

PARTIALLY SWITCHING STORAGE WITH CORES CONSISTING OF MAGNETIZABLE MATERIAL

Jan Arnoldus van Stuyvenberg, Hengelo, Netherlands, assignor to N. V. Hollandse Signaalapparaten, Hengelo (Overijsel), Netherlands

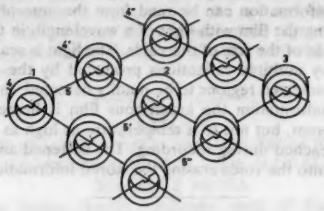
Continuation of application Ser. No. 539,567, Apr. 1, 1966, now abandoned. This application Nov. 3, 1969, Ser. No. 871,547

Claims priority, application Netherlands, Apr. 3, 1965, 6504262

Int. Cl. G11c *5/02, 11/06*

U.S. Cl. 340—174 M **3 Claims**

A magnetic core storage device employing a plurality of cores having word and write conductors, a driving circuit for supplying word pulses having a magnitude for generating a field exceeding the saturation field required for each core. The word pulse has a short duration which restricts the core magnetization. Coincident writing and reading pulses are supplied on corresponding write conductors, and the control circuit further supplies supplemental pulses to the write conductor in a direction opposite to that of the first write conductor pulse and not overlapping the word control pulse.



3,636,533

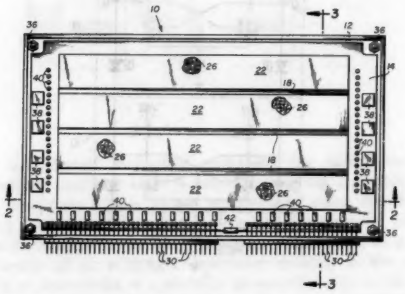
MEMORY CORE SUBMODULE

Julius Fred Rathjen, Franklin Lakes, and Morris O. Stein, Wayne, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,639

Int. Cl. G11b *5/00*

U.S. Cl. 340—174 M **5 Claims**



A memory core submodule wherein at least one printed circuit board is laminated to opposite surfaces of an aluminum heat sink and a shield sheet is laminated to the outer surface of each of the circuit boards. An array of magnetic core members are fixed with respect to the outer surface of each of the shield sheets, and are electrically connected to the circuit boards.

3,636,534

WRITE METHOD OF A MAGNETIC WIRE MEMORY

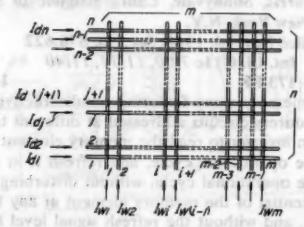
Susumu Hibi, Yokohama, and Hideo Fujiwara, Tachikawashi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1969, Ser. No. 877,796

Claims priority, application Japan, Nov. 25, 1968, 43/85597

Int. Cl. G11b *5/00*

U.S. Cl. 340—174 TF **5 Claims**



In a thin film magnetic wire memory device which is employed as a memory for the read-only use, a writing method

characterized by the steps of making a digit current (pulse) flow in the magnetic wires in which an information is to be written, making a word driving current flow through only the necessary ones of the word driving lines during the duration of said digit current thereby to write the information "1" (or "0") along said magnetic lines, next reversing the polarity of the digit current, making a word driving current flow through the other necessary ones of the word driving lines during the duration of said digit current thereby to write the information "0" (or "1"), whereby the information is written for each magnetic wire.

3,636,535

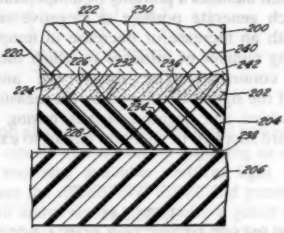
MAGNETO-OPTICAL TRANSDUCER

Stanton H. Cushner, Los Angeles; Patrick E. Ferguson; Henry W. Griffiths, both of Torrance, and Alfred M. Nelson, Redondo Beach, all of Calif., assignors to The Magnavox Company, Torrance, Calif.

Continuation of application Ser. No. 539,386, Apr. 1, 1966, now abandoned. This application Dec. 10, 1969, Ser. No. 880,490

Int. Cl. G11c *13/04*

U.S. Cl. 340—174.1 M **21 Claims**



This invention relates to a magneto-optical transducer having a thin magnetic film of a critical thickness dependent upon the characteristics of the magnetic materials comprising the film. When the film is provided with the critical thickness, the rotation of polarized light directed to the film is enhanced to an optimum value. This rotation is produced in accordance with the magnetic states provided in the thin film. The ellipticity of the rotated light is also minimized by providing the thin film with a critical thickness.

The thin film is supported by a substrate which preferably comprises an optical prism. A thin layer of a dielectric layer is preferably disposed on the thin magnetic film to enhance the reflectivity of the transducer to the portion of the polarized light passing through the thin magnetic film. This enhanced reflectivity is desirable since the provision of the thin magnetic film with a critical thickness tends to reduce the ability of the thin magnetic film to reflect the polarized light directed to the film.

3,636,536

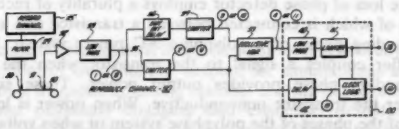
DERIVED CLOCK CIRCUIT IN A PHASE MODULATED DIGITAL DATA HANDLING SYSTEM

Kermit A. Norris, Azusa, Calif., assignor to Leach Corporation, San Marino, Calif.

Filed Mar. 21, 1968, Ser. No. 715,098

Int. Cl. G11b *5/06*

U.S. Cl. 340—174.1 H **29 Claims**



A method and apparatus for deriving a clock signal in a high-density digital data system wherein digital data levels are obtained directly from a coded signal recovered from a magnetic medium without any initial reliance on a clock signal. Such digital levels are obtained from the recovered coded signal by employing a decoder which utilizes differential phase shift techniques including a one-bit delay circuit. After such digital data levels have been derived, they serve as logic commands to gate out pulses representative of particular transitions of the coded signal recovered from the magnetic medium. The coded signal is applied to transition detectors yielding sharp spiked outputs for both positive and negative going transitions in the coded signal. The digital data levels logically pass and inhibit selected ones of the spiked pulses so that a continuous clock signal synchronized substantially at the midbit interval of existing digital data levels is generated. Both the digital data levels initially obtained without reliance on a clock signal, and a data-synchronized clock are available to utilization circuitry such as a computer.

3,636,537

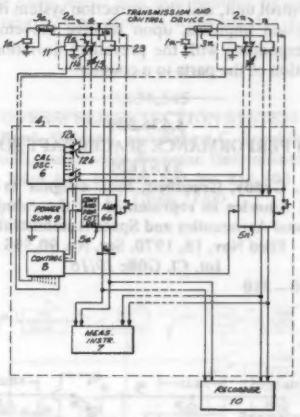
MULTICHANNEL REMOTE-MEASURING NETWORK

Jacques Terry, 14 Allee Diamant-Foret de Vernon, 276 Vernon, France

Continuation-in-part of application Ser. No. 807,666, Mar. 17, 1969. This application Feb. 26, 1970, Ser. No. 14,539

Int. Cl. G08c *15/00*

U.S. Cl. 340—182 **15 Claims**



A precision, remote-measuring network with a plurality of channels each including a local sensor. A remote control is connected to each channel and includes a calibrating oscillator. Measurement transmitter and control devices are connected to the sensors and include a variable capacitor coupled to the oscillator and a relay connected between the sensors and capacitor whereby a capacitance bridge is formed. A hermetically sealed housing encloses the capacitors.

3,636,538

APPARATUS FOR THE DETERMINATION OF THE POSITION OF TWO PARTS MOVABLE RELATIVE TO EACH OTHER

Horst Burkhardt, Stein an der Traun, Germany, assignor to Dr. Johannes Heidenhain, Traunreut nr. Traunstein, Germany

Filed Nov. 25, 1968, Ser. No. 778,538

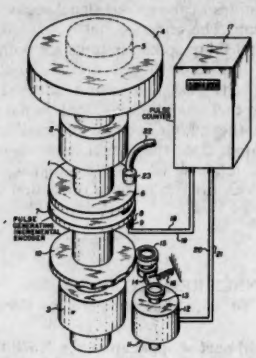
Claims priority, application Germany, Nov. 25, 1967, P 16 23 905.7

Int. Cl. G08c *19/16*

U.S. Cl. 340—206 **2 Claims**

An apparatus for the determination of the position of two parts moveable relative to each other, wherein the value to

be measured as to size and direction is determined by impulsive counting, which comprises a correction system in addition to a measuring system for parts moveable relative to each other. The measuring system includes an indication unit



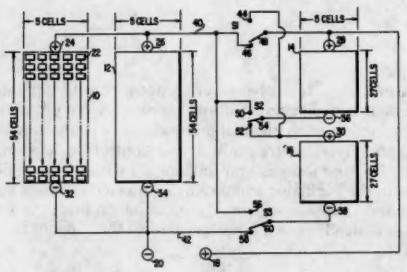
and/or a control unit, and the correction system is adapted to feed correction impulses, upon relative movements of the parts, corresponding with the prevailing deviation of the assigned position of the parts to a counter.

3,636,539

OPTIMUM PERFORMANCE SPACECRAFT SOLAR CELL SYSTEM

Edward M. Gaddy, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 18, 1970, Ser. No. 90,595
Int. Cl. G08c *19/16*
U.S. Cl. 340—210 **8 Claims**



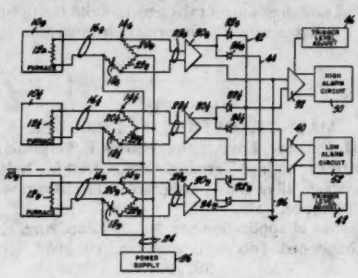
A spacecraft solar cell system including a switching circuit which comprises relay operated switches for changing a plurality of solar cells from a first series-parallel interconnection to a second series-parallel interconnection is disclosed. The relays are actuated by a command device which may be a telemetry receiver. A protection circuit comprising a photodiode is connected between the command device and the relays to ensure appropriate solar cell orientation when switching occurs. This prevents arcing across the relay switches.

3,636,540

TEMPERATURE CONTROL ALARM SYSTEM

Holton E. Harris, Westport, Conn., assignor to Harrel Incorporated, East Norwalk, Conn.

Filed Nov. 29, 1968, Ser. No. 779,768
Int. Cl. G01k *7/24*, *7/16*
U.S. Cl. 340—228 **7 Claims**



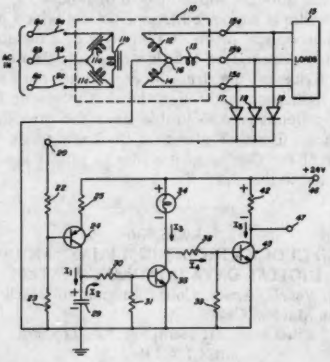
As described herein, a temperature alarm control system is provided which includes a plurality of temperature measuring devices which generate positive or negative signals in accordance with an increase or decrease in temperature in a corresponding number of furnaces to which the devices are operatively connected. The signals are amplified and thereafter, of the signals developed by the measuring devices, only the positive and negative signals having the greatest magnitudes are supplied to an alarm circuit to excite a pair of alarms.

3,636,541

LOSS OF PHASE DETECTOR FOR A POLYPHASE POWER SYSTEM

Luther L. Genuit, Scottsdale, and Roger D. Lackey, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc.

Filed Apr. 9, 1970, Ser. No. 26,864
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 B **3 Claims**



The loss of phase detector employs a plurality of rectifiers each of which is connected between a transistor and a corresponding phase of a polyphase AC power system. Each rectifier couples a signal to the transistor when the corresponding phase provides output power. These signals render the transistor nonconductive. When power is lost in any of the phases of the polyphase system or when voltage in the system decreases below a predetermined value, the transistor is rendered conductive so that a capacitor in series

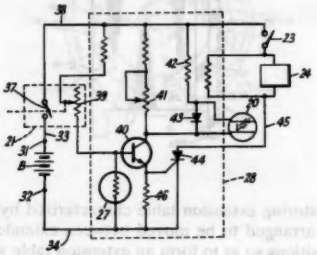
with the transistor is charged by a reference voltage which is connected to the transistor. The charge on this capacitor provides a signal that activates an indicating device which warns that power has been lost in one of the phases of the polyphase power system.

3,636,542

PORTABLE PHOTORESPONSIVE INTRUSION ALARM

Joseph H. Apple, Alexandria, Va., assignor to AMF Incorporated

Filed Oct. 15, 1969, Ser. No. 866,649
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 B **12 Claims**



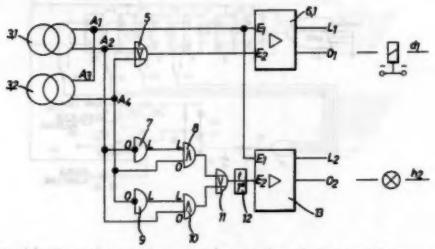
An intrusion alarm with a self-contained power source having a trigger circuit with means for adjusting its standby level and means receiving available ambient light which when blocked causes the circuit level to rise and provide a triggering signal. An alarm signal circuit with a gated semiconductor is energized by the trigger signal provided to the gate of the semiconductor. The intrusion alarm may be modified for connection to an outside source and may be provided with a remotely positioned signal generator.

3,636,543

SAFETY LIMIT FEELER FOR CONTACTLESS CONTROL

Kurt Maecker, Kreuzstrasse 34, 4 Dusseldorf, Germany

Filed Oct. 1, 1969, Ser. No. 862,897
Claims priority, application Germany, Nov. 15, 1968, P 18 09 100.4
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **7 Claims**



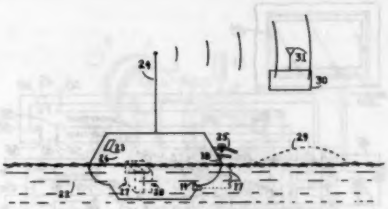
A control arrangement in which a pair of magnetically sensitive control elements are adapted for simultaneous actuation by a magnetic actuating member moving in proximity to but not physically engaging said elements. Actuation of either control element will cause a control function to be carried out while failure to actuate either one only of the control elements will cause an alarm circuit to be actuated.

3,636,544

ALARM

Jorge G. Codina, 223 Secor Road, Hartsdale, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,940
Int. Cl. G08b *5/22*
U.S. Cl. 340—261 **2 Claims**



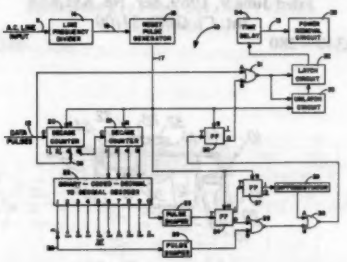
A system for sounding an alarm when an unauthorized person or unidentified object enters a swimming pool. The system employs a float containing a battery powered transmitter tuned to a selected fixed frequency. The transmitter is energized when the person or object enters the water whereby a signal at said frequency is transmitted. A receiver tuned to the same signal acts as a monitor by receiving the signal and reproducing same in form suitable for sounding the alarm.

3,636,545

OVERSPEED DETECTION SYSTEM

William R. Boyd, Oakland, and Robert C. Franklin, San Jose, both of Calif., assignors to Beckman Instruments, Inc.

Filed Apr. 1, 1969, Ser. No. 811,803
Int. Cl. G08b *21/00*
U.S. Cl. 340—263 **22 Claims**

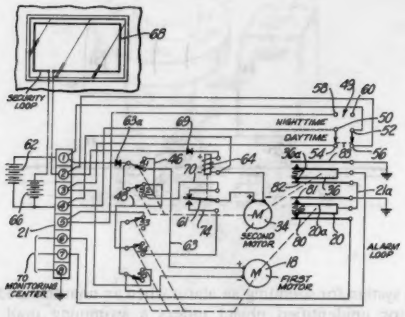


A system for sensing an overspeed condition which may exist in a rotating device such as a centrifuge. The system receives, as its inputs, a train of pulses, each pulse indicative of a predetermined number of revolutions of the rotating device. The system functions as an events per-unit-time counter, counting the input pulse rate for a given interval of time with the total pulse count representing the desired speed if the rotating device is onspeed. If the device exceeds the desired speed by a predetermined percentage, the system is activated to indicate an overspeed condition and automatically remove power from the rotating device drive circuits. To prevent premature shutdown of the rotating device by spurious triggering signals, a time delay circuit requires that the overspeed condition exist for a predetermined time interval before system shutdown is accomplished.

3,636,546
ALARM SYSTEM TRANSMITTER

John S. Lomonaco, 429 South Victory Blvd., Burbank, Calif.

Filed July 2, 1968, Ser. No. 741,953
Int. Cl. G08b 25/00
U.S. Cl. 340—276 8 Claims

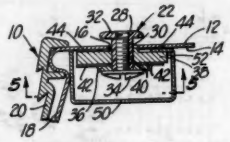


An alarm system having a security circuit loop which passes through an area to be protected and an alarm circuit loop for transmitting alarm signals to a monitoring center, including means for generating a plurality of discrete coded signals indicating the operation of an on-off switch located outside the protected area, a discontinuity in the security circuit and any authorized or unauthorized entry into the protected area and distinctively identifying the protected area.

3,636,547
ALARM SYSTEM AND METHOD OF INCORPORATING MAGNETIC SWITCH MEANS MAGNETICALLY CONTROLLED ELECTRICAL SWITCHES

Robert J. Brace, 21721 Roscoe Blvd., Canoga Park, Calif., and Meyer Fienberg, 7259 Hillside Ave., Los Angeles, Calif.

Filed June 9, 1969, Ser. No. 831,613
Int. Cl. G08b 21/00
U.S. Cl. 340—280 7 Claims

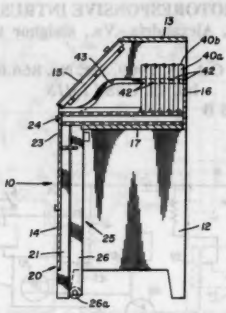


A magnetically controlled switch-actuating member projects upwardly from the supporting surface of a shelf, rack or the like positioned for downward depression by a merchandise article supported on the shelf. The switch-actuating member extends downwardly through a permanent magnet block at the shelf underside, the actuating member always being urged magnetically upwardly to projecting position when depressed by the article on the shelf. Electrical contact strips extend over the magnet block and are free of contact by the actuating member when in its article-depressed position, but contacted by the actuating member when in its projecting position completing an electrical circuit therethrough to any form of electrically actuated device, such as an alarm. Thus, any given series of switches may be provided and will sound the alarm when any one of a series of articles is removed from the shelf.

3,636,548
SELF-STORING EXTENSION TABLE

Joseph Maruzzelli, 37 Walnut Street, Jamestown, N.Y.

Filed Feb. 4, 1970, Ser. No. 8,559
Int. Cl. A47b 77/10
U.S. Cl. 312—282 3 Claims

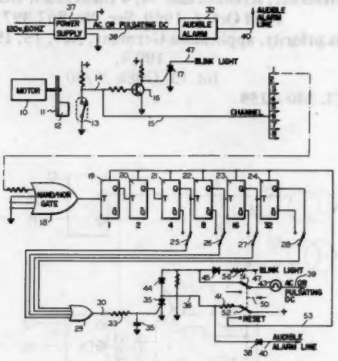


A self-storing extension table characterized by a plurality of leaves arranged to be moved between extended and collapsed positions so as to form an extension table with certain of the leaves being provided with rollers that are received in a cam groove so as to guide the leaves during movement between open and closed positions automatically.

3,636,549
MULTICHANNEL INTERVAL TIMER

Richard M. Berman, Dresher, Pa.; Bernard Schwartz, Springfield, and Lyman W. Bethke, Trenton, both of N.J., assignors to Alphamedics Mfg. Corp., Levittown, Pa.

Filed Jan. 5, 1970, Ser. No. 649
Int. Cl. G04c 21/16
U.S. Cl. 340—309.1 7 Claims

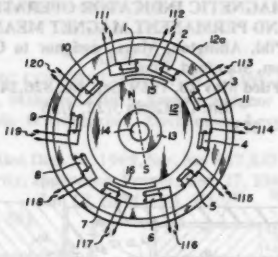


A multichannel time interval measuring and control instrument using solid-state logic providing individually preset, programmed or presettable timing channels supplying a wide range of time intervals, in which each timing channel is individually selectable by a pushbutton, or automatically programmed in sequence or in parallel to initiate the operation being controlled, and wherein the timer audibly and usually signals the human operator at the end of the selected interval, or automatically terminates or starts the operation being monitored or controlled.

3,636,550
MAGNETIC WHEEL WITH ROTOR POSITION SENSOR

Charles E. Clift, and David G. Evans, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Dec. 19, 1969, Ser. No. 886,616
Int. Cl. G08c 19/20
U.S. Cl. 340—319 11 Claims

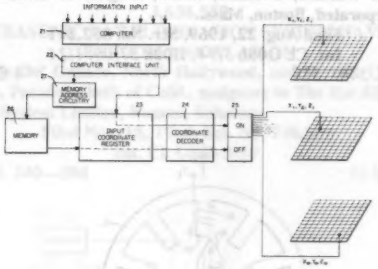


A unique magnetic circuit in a magnetic rotor position sensor couples the change of the periodically generated DC magnetic flux in a command coil to an interrogating coil.

3,636,551
COMPUTER-CONTROLLED THREE-DIMENSIONAL DISPLAY

Edward T. Maguire, Newtown Square, Pa., assignor to Ke General Corporation, Paoli, Pa.

Filed May 15, 1969, Ser. No. 824,872
Int. Cl. G06f 3/14
U.S. Cl. 340—324 R 3 Claims

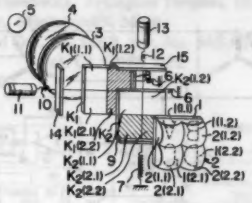


An apparatus is disclosed comprising a three-dimensional display unit having located therein, at regular coordinate intervals, display elements which indicate the coordinate positions of objects in a three-dimensional space, and control logic circuitry by which said display elements are controlled and driven. The apparatus interfaces with a general purpose digital computer from which it derives data inputs which are processed so as to present a real-time display of moving objects, as well as directions of movement.

3,636,552
OPTICAL PATH SELECTION SYSTEM

Isamu Orima, Sagamihara-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan.

Filed Aug. 22, 1969, Ser. No. 852,342
Claims priority, application Japan, Aug. 31, 1968, 43/62536
Int. Cl. G08b 5/32
U.S. Cl. 340—324 R 7 Claims

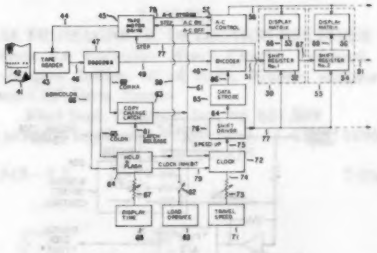


An optical path selection system for use in information display or retrieval system wherein backwardly of a character plate having a suitable number of characters arrayed in rows and columns are disposed a plurality of character selection plates each having a plurality of transparent and opaque frames which are arrayed in accordance with the binary codes representing such characters. The number of such character selection plates is the same as that of the bits constituting said codes; and said character selection plates are selectively displaced in either of the row or column direction by a distance corresponding to the width of each frame in response to an instruction given in the form of the codes, thereby opening the optical path only for a selected character in response to the instruction.

3,636,553
ALPHA-NUMERIC DISPLAY SYSTEM

Bruce Jay Hancock, 107 N. Sycamore, Mesa, Ariz.

Filed Jan. 21, 1969, Ser. No. 792,436
Int. Cl. G08b 5/36
U.S. Cl. 340—336 11 Claims

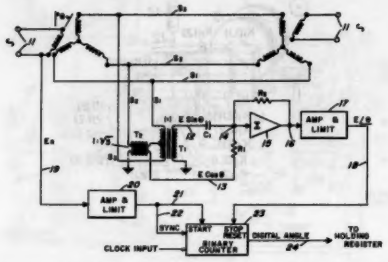


A changeable neon sign employs a series of symbol display modules, each of which is made up of a matrix of glow tubes; the individual elements which can be activated to produce any selected letter or numeral are caused to glow in the desired arrangement. A series of such modules is controlled to come on in desired sequence by a solid-state switching system which in turn is programmed by a tape control or reader system. The switching system, including a shift register, can present the input data as traveling copy. A digital input code can present other data.

3,636,554
SYNCHRO-TO-DIGITAL CONVERTER

William N. Farneth, Cato, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 13, 1970, Ser. No. 36,829
Int. Cl. H03k 13/02
U.S. Cl. 340—347 SY 6 Claims

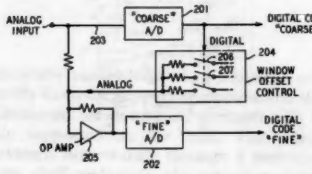


A synchro rotor position-to-digital number converting means having a transformer to transform the three phases of the synchro into a sine phase and a cosine phase 90° apart, summing these phases into an analog voltage representative of the resultant angle, and a binary counter coupled to be started in count from the synchro reference voltage or a clock synchronizing frequency and coupled to be stopped in counting by the summed analog voltage in accordance with the three-phase synchro input rotor angular position.

3,636,555
ANALOG TO DIGITAL CONVERTER UTILIZING PLURAL QUANTIZING CIRCUITS

Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 4, 1970, Ser. No. 16,417
Int. Cl. H03k 13/175
U.S. Cl. 340—347 AD 1 Claim

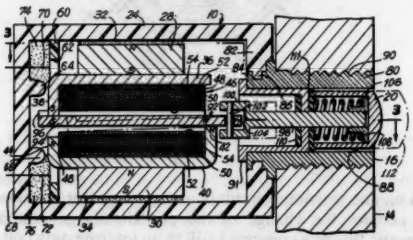


A plurality of circuits which provide both sampling and comparison functions periodically sample an analog signal and compare the sample with an associated reference voltage. Since the sampling and comparison operations are performed by a single circuit, both operations are performed within the duration of a single energizing timing pulse. In response to these comparisons, the outputs of a plurality of gating means indicate the quantizing range within which the analog sample occurs and energize a read-only memory which stores digital output words corresponding to the quantizing ranges. In a preferred embodiment, two such encoders are used in conjunction with a switchable operational amplifier to obtain coarse and fine encoding.

3,636,556
ELECTROMAGNETIC INDICATOR OPERATED BY COIL AND PERMANENT MAGNET MEANS

George E. Pihl, Abington, Mass., assignor to General Time Corporation, Stamford, Conn.

Filed May 20, 1969, Ser. No. 826,248
Int. Cl. G08b 5/22, 5/26
U.S. Cl. 340—373 5 Claims

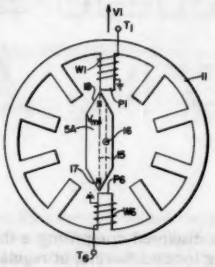


Electromagnetic indicator is provided which comprises electromechanical means for positively retaining the same in the reset condition, and electromagnetic means and biasing means for respectively releasing the said electromechanical retaining means and placing the indicator in the set condition. Included are indicating means which provide readily discernible indicia that the indicator is in the set condition.

3,636,557
ELECTROMAGNETIC INDICATOR HAVING OFFSET ROTOR MAGNET

John A. Watkins, Cheshire, Conn., assignor to United-Carr Incorporated, Boston, Mass.

Filed Aug. 22, 1969, Ser. No. 852,211
Int. Cl. G08b 5/14; H02k 37/00, 1/24
U.S. Cl. 340—378 4 Claims



An indicator is disclosed having a rotor which is able to turn promptly to 180° opposed positions to permit the successive display of diametrically opposed symbols carried on a drum. The position of the rotor's drum is governed by a sta-

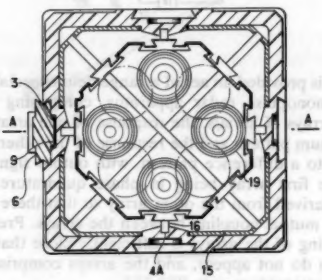
tor that can establish any one of a number of differently oriented magnetic fields. The rotor has a permanent magnet which turns to align itself with the stator's magnetic field. By mounting the rotor to turn about a rotational axis so disposed that upon 180° reversal of the stator's magnetic field, the repelling field forces acting on the magnet do not pass through the rotational axis, the application of a turning force on the magnet is assured. The magnet is fashioned to cause its magnetic flux to be concentrated at two salient magnetic poles and is arranged to rotate about an axis offset from an straight line joining the salient poles.

3,636,558

SYNOPTIC CONTROL AND SIGNALLING BOARD

Jean Debaigt, Maisons-Laffitte, France, assignor to Compagnie Generale D'Entreprises Electriques, Levallois-Perret, France

Filed Dec. 24, 1969, Ser. No. 887,835
Claims priority, application France, Dec. 27, 1968, 181341
Int. Cl. G09f *7/02, 9/30*
U.S. Cl. 340—381 **8 Claims**



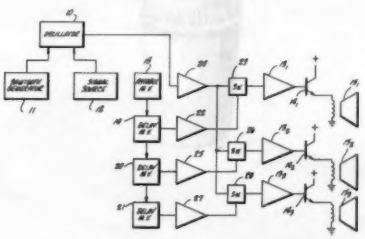
A synoptic control and signal panel comprising mosaic elements having no supporting grid and consisting of detachable panels bearing symbols or data in the form of a diagram. The panels are assembled together by keys having a double dovetail shape which engages hollow parts on the side faces of the panels.

3,636,559

ULTRASONIC RAT ELIMINATION SYSTEM HAVING RANDOM MODULATION

Dominic Del Grande, North Hollywood, and Donald C. Erdman, Pasadena both of Calif., assignors to The Rat Elimination System Limited, Nassau, Bahamas

Filed Nov. 18, 1968, Ser. No. 776,646
Int. Cl. G08b *3/10*
U.S. Cl. 340—384 **11 Claims**



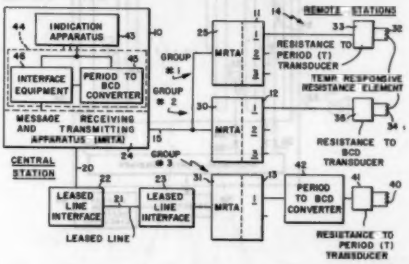
Apparatus and method for repelling rats and mice from an area by means of generation of a modulated ultrasonic sound level. The sound level is frequency modulated within a range of ultrasonic frequencies to which rats and mice respond. In addition, it is amplitude modulated in a random manner. The modulations of the signal prevent rats and mice from adapting to the sound, and thereby renders the sound particularly unpleasant to them.

3,636,560

TRANSMISSION SYSTEM MESSAGE FORMAT FOR REPORTING CONDITIONS FROM REMOTE STATIONS TO A CENTRAL STATION

Frank H. W. Schoenwitz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 13, 1969, Ser. No. 865,820
Int. Cl. G08b *5/22*
U.S. Cl. 340—409 **6 Claims**



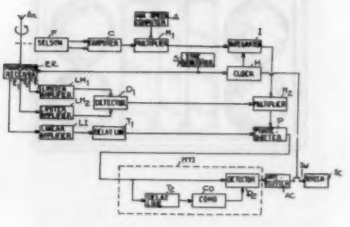
A condition supervision system for supervising conditions of a building air conditioning system wherein processing and indication apparatus at a central station is connected over a transmission circuit to a plurality of remote stations whereby messages indicative of conditions at the remote stations are indicated at the central station. The message format used by remote stations to report the condition at a particular remote station comprises two portions. The first portion of the message identifies the data and the form of the output from a condition responsive transducer of that station. The second portion is made up of the output from the transducer; so that, when a remote station reports to the central station, the first portion of the message is used to inform a central station processing apparatus of the form of the output to be received in the second portion of the message so that a type of processing can be selected for the particular form of output in the second portion of the message.

3,636,561

ELECTROMAGNETIC DETECTION RECEIVER

Guy Francis Le Parquier; Henri Charles Poinsard, and Marie-Jacques Jullien, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 29, 1969, Ser. No. 861,889
Claims priority, application France, Oct. 15, 1968, 169986
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **7 Claims**



In a monopulse radar system the phase difference between successive echoes from the same target is modified to make

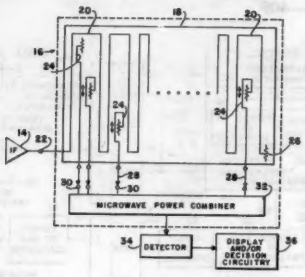
this difference equal to what it would be if the target were on the axis of the beam.

3,636,562

HIGH-RANGE RESOLUTION RADAR TARGET MATCHED FILTER

Donald R. Wehner, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 24, 1970, Ser. No. 13,414
Int. Cl. G01s 9/02
U.S. Cl. 343—5 SA 2 Claims



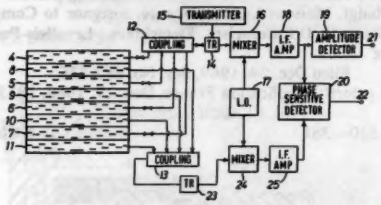
A radar target matched filter for improving target recognition and identification capabilities of high-range resolution radar systems. The filter comprises a microwave delay line having a plurality of adjustable energy coupling taps distributed along the delay line and set at selectively predetermined positions along the delay line corresponding to known scatter centers of a particular target. The tap outputs are combined such that the single dominant output which results will peak upon receiving reflected signals from targets for which the filter is matched.

3,636,563

AERIAL ARRANGEMENTS

Robert Clement Laverick, Yateley, and Peter Rothwell Smith, Windsor, both of England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England

Filed May 13, 1969, Ser. No. 824,141
Claims priority, application Great Britain, May 31, 1968, 26,084/68
Int. Cl. G01s 3/02, 9/22
U.S. Cl. 343—113 R 4 Claims



There is provided an aerial arrangement especially applicable to monopulse radar apparatus, comprising two interleaved arrays of aerials, the response of one array conforming to a sum pattern and the response of the other array conforming to a difference pattern, with output signals derived from the first array being in phase quadrature to output signals derived from the other array so that there is substantially no mutual coupling between the arrays. Preferably the interleaving of the arrays is sufficiently close that unwanted sidelobes do not appear, and the arrays comprise arrays of slotted waveguide aerials.

DESIGNS

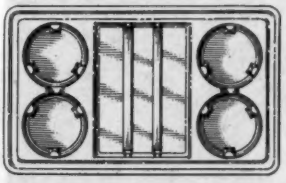
JANUARY 18, 1972

222,849
AUTOMOBILE RADIATOR CAP TOOL
Philip A. Heaver, Newtown Square, Pa. (% Car Buddy Corp., 250 Rock Hill Road, Bala-Cynwyd, Pa. 19004)
Filed Nov. 6, 1970, Ser. No. 25,860
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21

222,850
CONTAINER FOR FLOWABLE MATERIALS OR THE LIKE
Kenneth H. Zeop, Beaverton, James C. White, Gladwin, and Elwyn Jones, Beaverton, Mich., assignors to Koehring Company
Filed Oct. 6, 1970, Ser. No. 25,354
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

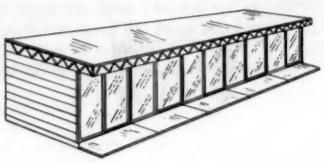
222,851
BOTTLE OR SIMILAR ARTICLE
Domas Adomaitis, Chicago, and Howard M. Turner, Oak Forest, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Continuation of design applications Ser. No. 16,721, Ser. No. 16,722, and Ser. No. 16,724, all Apr. 14, 1969. This application May 18, 1970, Ser. No. 23,034
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—111

222,852
DISPOSABLE FOOD SERVING TRAY
Harford E. Goins, 5428 Center Drive, Camp Springs, Md. 20031
Filed July 22, 1970, Ser. No. 24,069
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185

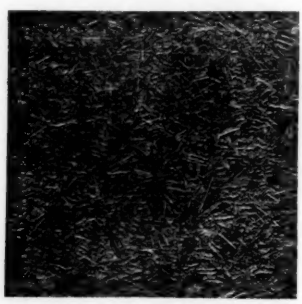


222,853
OVERCAP FOR A PRESSURIZED CAN
Herbert R. Carpenter, Chicago, Ill., assignor to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.
Continuation-in-part of design application Ser. No. 16,001, Mar. 3, 1969. This application Nov. 18, 1969, Ser. No. 20,159
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258

222,854
PATIO ROOM
Donald J. Weiss, 745 S. Glencoe St., Denver, Colo. 80222
Filed Mar. 30, 1970, Ser. No. 22,124
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

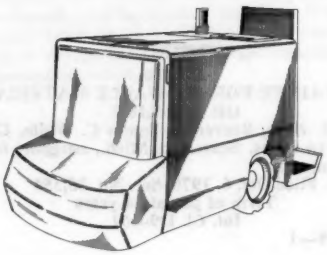


222,855
WALL PANELING
Richard H. Kamrath and Francis L. Harrison, Redding, Calif., and Robert C. Bauer, Arlington, Tex., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed Apr. 13, 1970, Ser. No. 22,421
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



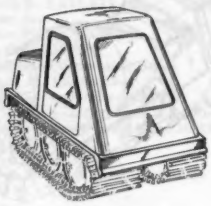
222,856
WALL PANELING
Frederich Richard Ashby, Carmel, N.Y., and Donald F. Luebs, Vienna, Va., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed Apr. 30, 1970, Ser. No. 22,726
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1

222,857
INDUSTRIAL VEHICLE
Rigsby C. Satterfield, Chalfont, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 3, 1970, Ser. No. 22,232
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D14—3

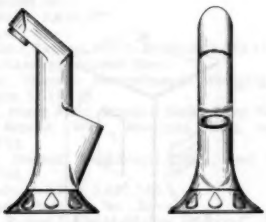


222,858
SNOWMOBILE SEAT
Anthony MacKeen and Yves Anselme La Pointe, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 6, 1969, Ser. No. 19,432
Term of patent 14 years
U.S. Cl. D14—24
Int. Cl. D12—*16*

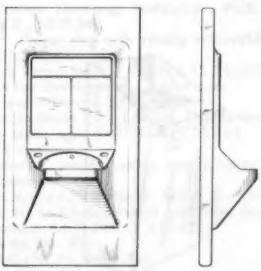
222,859
VEHICLE BODY
Pierre A. Delisle, Loretteville, and Yves Anselme La Pointe, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed June 29, 1970, Ser. No. 23,729
Claims priority, application Canada June 15, 1970
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



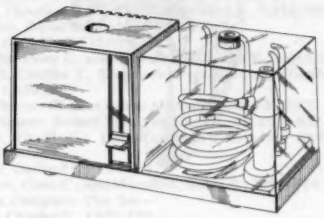
222,860
WATER FAUCET ATTACHMENT FOR IMPROVING THE TASTE OF DRINKING WATER
Donald F. Hassinger, Ann Arbor, Mich., assignor to Pure Stat Corporation, Ann Arbor, Mich.
Filed Apr. 20, 1970, Ser. No. 22,510
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



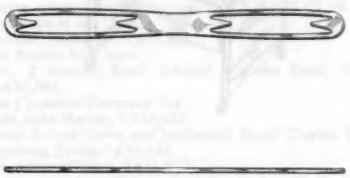
222,861
COMBINED WASH-BASIN AND CABINET
Gustav Koenig, Christian Franz, and Peter Huebner, Bonlanden, near Stuttgart, Germany, assignors to Gustav Koenig, Unternehmensberatung, Bonlanden, near Stuttgart, Germany
Filed July 21, 1970, Ser. No. 24,049
Claims priority, application Germany Jan. 22, 1970
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—59



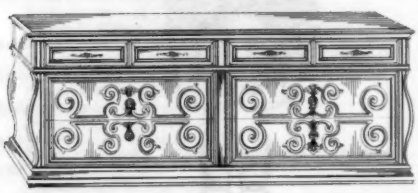
222,862
DENTAL IRRIGATOR
William J. Cook, Trumbull, Conn., assignor to General Electric Company
Filed Apr. 15, 1970, Ser. No. 22,435
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



222,863
DENTAL COTTON ROLL HOLDER
Karl G. Von Grossmann, Minneapolis, Minn., assignor to Dental Products, Inc., Minneapolis, Minn.
Filed Aug. 24, 1970, Ser. No. 24,656
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



222,864
DRESSER
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Apr. 17, 1970, Ser. No. 22,481
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D33—6

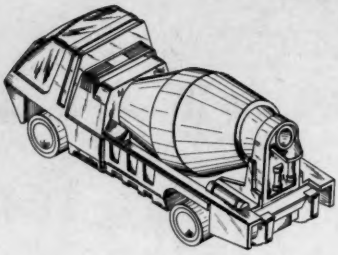


222,865
TOOL HOLDER
Romaine Branford Coy, 18747 Martha Ave., Saratoga, Calif. 95070
Filed Jan. 14, 1970, Ser. No. 20,924
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D33—17

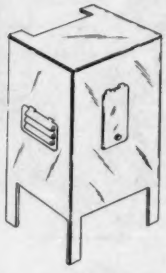
222,866
FILE CART WITH TAMBOUR COVERS
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Oct. 7, 1970, Ser. No. 25,374
Term of patent 14 years
Int. Cl. D6—*01;* D12—*02*
U.S. Cl. D33—19

222,867
FIGURE TOY
Erin Libby, Hermosa Beach, and Joyce H. Christopher, Long Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 19, 1970, Ser. No. 21,510
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4

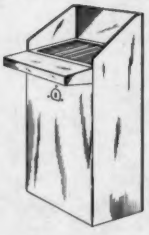
222,868
TOY TRUCK
Ira B. Gilford, Thousand Oaks, and Alan W. B. Nash, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 2, 1970, Ser. No. 21,671
Int. Cl. D21—*01*
U.S. Cl. D34—15



222,869
GAS METER COVER
Melvin Louis Vasel, 9915 Kennerly Road, St. Louis County, Mo. 63128
Filed July 2, 1970, Ser. No. 23,809
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



222,870
OUTDOOR STOVE FOR RECREATION AREAS
Wells S. Bearinger, St. Ann, Mo., assignor to Empire Stove Company, Belleville, Ill.
Filed Feb. 20, 1970, Ser. No. 21,544
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JANUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

230494 Merchandising Limited: *See—*
Lennie, Kenneth B., 3,635,423.

Abbott Laboratories: *See—*
Johnson, Robert Phillip, 3,636,201.
Yellin, Tobias O., 3,635,971.

ABC Packaging Machine Corporation: *See—*
Cobelo, Vincent, Jr., 3,635,129.
Reichert, Donald G.; and Pasteris, John A., 3,634,996.

Abnett, Albert C.; and Alexander, Jack S., to Reliance Electric Company. Continuous function generation. 3,636,338, Cl. 235-197.

A.C.E. Machinery Limited: *See—*
Shalders, Alan John, 3,635,315.

Ackermann, Karl, to Bosch, Robert, Photokino G.m.b.H. Electronic flash unit. 3,636,406, Cl. 315-241.

Acrodyne, Inc.: *See—*
Dixon, Brook, 3,636,257.

Adachi, Kazuo; Tai, Akira; and Higashi, Fukuji, to Tekkosha Co., Ltd. Polymer derived from dialkyl succinylsuccinates and diamines. 3,635,888, Cl. 260-47.

Adamek, John A.; Draugelis, Vaidevutis C.; and Oriel, George J., to Xerox Corporation. Cascade developing apparatus utilizing a rotary wheel with scoops. 3,635,553, Cl. 355-3.

Addamiano, Arrigo; and Perusek, Ronald J., to General Electric Company. Single crystal silicon carbide display device. 3,636,397, Cl. 313-108.

Adler, Stanford L.: *See—*
Peoples, John C. A.; and Adler, Stanford L.,3,635,680.

Aerojet-General Corporation: *See—*
Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Barry, Jude W., 3,635,869.

Aerostatic Limited: *See—*
Dee, Colin W., 3,635,577.

Agfa-Gevaert AG: *See—*
Ambraschka, Kasimir; and Bickl, Horst, 3,635,135.

Agfa-Gevaert Aktiengesellschaft: *See—*
Grabhofer, Herbert; Himmelmann, Wolfgang; and Glabisch, Dieterich, 3,635,715.
Herzhoff, Peter; Platz, Stephan; Maus, Fritz; Schweicher, Wolfgang; Wasser, Willi; Browatzki, Kurt; and Gref, Hans, 3,635,192.
Kampfer, Helmut; Ohlschlager, Hans; and Gesierich, Wolf, 3,635,706.
Nassenstein, Heinrich, 3,635,540.

Air Products and Chemicals, Inc.: *See—*
Tedeschi, Robert J.; and McMahon, Herbert C., 3,636,167.

Air Reduction Company, Incorporated: *See—*
Bryant, Gerald T.; and Mayfield, James L., 3,635,599.
Nichols, Kenneth E., 3,635,581.

Akahori, Hiroshi; Ohnuma, Yoshiro; and Kubozoe, Morioki, to Hitachi, Ltd. Electron beam generator for electron miscroscope or the like apparatus. 3,636,346, Cl. 250-49.5

Akai Electric Company Limited: *See—*
Sato, Noboru; and Nakano, Tatsumi, 3,636,275.

Akamatsu, Takashi: *See—*
Hotta, Seiji; Nakano, Tomio; Kenmochi, Hirohito; and Akamatsu, Takashi,3,636,064.
Yamada, Eiji; Hamaguchi, Kunimasa; and Akamatsu, Takashi,3,636,008.

Akerberg, Dag E. Son: *See—*
Mossberg, Kare Hjovard; and Akerberg, Dag E. Son,3,636,466.

Aktiebolaget Astra: *See—*
Sandberg, Rune Verner, 3,636,221.

Aktieselskabet Grindstedvaerket: *See—*
Moller, Torben Torsbjerg; Nedenskov, Poul; and Rasmussen, Henning B., 3,635,949.

Albert, Gilbert. Finger ring with readily removable piece displayed thereby. 3,635,047, Cl. 63-29.

Alberts, Herbert. Zipper tooth. 3,634,915, Cl. 24-205.13

Alcan Research and Development Limited: *See—*
Williams, Merlyn Morris, 3,635,408.

Alderton, Brian, to Scolar Press Limited, The. Means for photographically copying book pages. 3,635,557, Cl. 355-65.

Alexander, Jack S.: *See—*
Abnett, Albert C.; and Alexander, Jack S.,3,636,338.

Alignment Systems, Inc.: *See—*
Roodvoets, Roger J.; and Stapert, James, Jr., 3,634,941.

Allard, Gordon H., to Applied Power Industries, Inc. Dual pump and fluid motor system. 3,635,595, Cl. 417-426.

Allied Automation, Inc.: *See—*
James, Frazier N., Sr., 3,635,321.

Allied Chemical Corporation: *See—*
Beckham, Leland J., 3,635,661.
Howard, Carlton J.; and Port, Eugene B., 3,634,999.
Jenks, Theodore E.; and Bittner, Edward R., 3,636,199.
Kennedy, David K., 3,635,670.
Litke, Alvin C., 3,635,944.
Newallis, Peter E.; and Cheema, Zafarullah K., 3,636,204.
O'Neill, Charles T.; Krigbaum, Ronald S.; and Nussbaum, Ralph W., 3,636,141.
Schaffhauser, Robert J.; and Mason, Charles D., 3,635,933.
Schaffhauser, Robert J.; and Mason, Charles D., 3,635,934.
Snider, Orvill E.; Loughlin, James E.; and Ortheil, Hans, 3,635,653.
Turner, Garland L., 3,635,641.
Weedon, Gene C.; and Mumford, Robin B., 3,635,911.

Allis, Louis, Company, The: *See—*
Rettig, Charles E., 3,636,373.

Alpert, Robert J., to Blessings, Inc. Disposable headrest cover. 3,635,523, Cl. 297-220.

Alphamedics Mfg. Corporation: *See—*
Berman, Richard M.; Schwartz, Bernard; and Bethke, Lyman W., 3,636,549.

Alter, Henry L.: *See—*
Ingulli, Alfred F.; and Alter, Henry L.,3,636,140.

Altherr, Russell George, to Amsted Industries Incorporated. Modified pin hole for railway couplers. 3,635,357, Cl. 213-64.

Altherr, Russell George, to Amsted Industries Incorporated. Coupler arrangement. 3,635,358, Cl. 213-69.

Alton Box Board Company: *See—*
Hayes, William H., 3,635,361.

Altounyan, Roger Edward Collingwood; Howell, Harry; and Rowlands, Martyn Omar, to Fisons Pharmaceuticals Limited. Inhalation device. 3,635,219, Cl. 128-266.

Aluminum Specialty Company: *See—*
Martin, Wesley G., 3,635,854.

Ambraschka, Kasimir; and Bickl, Horst, to Agfa-Gevaert AG. Light measuring means for microfilm camera. 3,635,135, Cl. 95-10.

Amchem Products, Inc.: *See—*
Hamilton, Andrew J., 3,635,826.

American Brands, Inc.: *See—*
Black, J. Harold; Reed, Edward W.; and Stant, Vernon C., 3,636,363.

American Cyanamid Company: *See—*
Bright, John Harvey, 3,636,022.
Fessler, Robert Glenn; and Tredinnick, Bruce Charles, 3,635,970.
Klingsberg, Erwin, 3,636,048.
Lutz, Albert William, 3,635,977.
Mc Cormick, Jerry Robert Daniel; and Arnold, Nancy Hazlett, 3,636,081.
McCormick, Jerry Robert Daniel; and Arnold, Nancy Hazlett, 3,636,063.
Miller, Bernard; and Margulies, Howard, 3,636,205.
Murray, Robert William; and Hoffman, Joseph Adrian, 3,636,023.
Safir, Sidney Robert; and Greenblatt, Eugene Newton, 3,636,224.
Stamm, Robert Franz; Brinen, Jacob Solomon; Tennant, Evalyn Hosterman; and Halverson, Frederick, 3,635,544.
Zonis, Meyer Louis; Shah, Girish Chandulal; Saunders, Kenneth Worden; and O'Connor, Michael Niall Desmond, 3,634,944.

American Home Products Corporation: *See—*
Kim, Dong H.; and Santilli, Arthur A., 3,635,975.
Potoski, John R.; and Freed, Meier E., 3,635,982.
Santilli, Arthur A.; and Kim, Dong H., 3,635,965.
Wolf, Milton; and Sellstedt, John H., 3,635,953.

American Hospital Supply Corporation: *See—*
Blake, Lawrence W.; Bett, Bruce D.; and Lieber, Clement E., 3,634,924.

American Optical Corporation: *See—*
Berkovits, Barouh V., 3,635,274.
Young, C. Gilbert, 3,636,473.

American Plasticraft Company: *See—*
Simovits, Stephen S.; and Dumas, Christ J., 3,636,412.

American Seating Company: *See—*
Van Loo, William R., 3,634,925.

American Standard Inc.: *See—*
Harter, Donald G., 3,636,369.

American Sterilizer Company: *See—*
Bellucci, Edward A.; and Winschel, Carl J., 3,635,461.

AMF Incorporated: *See—*
Apple, Joseph H., 3,636,542.
Holman, Rudolph G., 3,635,482.
Ruben, Napoleon H.; and Tilburg, Holstof, 3,635,173.

Amicon Corporation: *See—*
Splitz, Stephen A., 3,635,846.

Amidon, Charles H., Jr., to Gulf & Western Systems Company. Apparatus for washing fabric web. 3,635,054, Cl. 68-43.

AMP Incorporated: *See—*
Carter, Clyde Thomas, 3,636,497.
Poltonavage, Edward Michael, 3,636,505.

Ampex Corporation: *See—*
Kowal, Leonard, 3,636,252.

Amrehn, Hermann, to Chemische Werke Huls Aktiengesellschaft. Method and system for the automatic control of chemical plants with parallel-connected computer back-up system. 3,636,331, Cl. 235-151.12

Amsted Industries Incorporated: *See—*
Altherr, Russell George, 3,635,357.
Altherr, Russell George, 3,635,358.
Shramovich, Paul F., 3,635,356.
Tack, Carl E., 3,635,168.

AMVIT: *See—*
Potter, Charles, 3,635,444.

Anderson, Carl C.: *See—*
Dowbenko, Rostyslaw; and Anderson, Carl C.,3,635,894.

Anderson, Carl M.: *See—*
Endress, James W.; and Anderson, Carl M.,3,635,041.

Anderson, Edward P.: *See—*
Stephens, Frank H., Jr.; Byrne, Paul B.; and Anderson, Edward P.,3,636,409.

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Kurokawa, Takaaki, to Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a Tokyo Shibaura Electric Co., Ltd. Cooling device in a glass bulb blowing apparatus. 3,635,689, Cl. 65-185.

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Lakodey, Andre; and Weiss, Francis, to Ugine Kuhlmann. Tetrahydroxylic organo compounds and the process for preparing the same. 3,636,164, Cl. 260-615.

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Larsen, Gregory J., to Wayne Manufacturing Company. Road sweeper suction and dirt chamber connection. 3,634,904, Cl. 15-340.

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Smith, Hugh B.: *See—*
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Smith, Roy R.: *See—*
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Smith, Thomas R., to Maytag Company, The. Twin agitator washing machine. 3,635,055, Cl. 68-131.

Smith, William C., to Rader Pneumatics & Engineering Co., Ltd. Pulpwood chipper. 3,635,410, Cl. 241-56.

Smithers, Philip G. K.; and Mower, Peter, to Trico-Folberth Limited. Windscreen wiper blades. 3,634,902, Cl. 15-250.42

SMW, Spanneinrichtungen, Schneider, Manz & Weisshaupt OHG: *See-*
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Snidar, Edward A., to O & S Bearing & Mfg. Co. Ball joint static seal for high angle applications. 3,635,508, Cl. 287-87.

Snider, Orvill E.; Loughlin, James E.; and Ortheil, Hans, to Allied Chemical Corporation. Polyester/polyamide blend fiber dyed with azo disperse dye. 3,635,653, Cl. 8-21.

Snitker, Jens C. Solid composite boards having a compact core of adhesive binder and 85-98% by volume of porous, non-absorbing granulates selected from the group consisting of cork, bark, and vermiculite. 3,635,784, Cl. 161-43.

Sobotka, Jiri: *See—*
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Societa Italiana Resine S.p.A.: *See—*
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Societe Anonyme de Telecommunications: *See—*
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Societe Anonyme dite: Roussel-UCLAF: *See—*
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Societe Anonyme Groupement Atomique Alsacienne Atlantique (G.A.A.A.): *See—*
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Societe Anonyme Poclain: *See—*
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Societe d'Etudes Verrieres Appliquees:*See—*
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Societe Nationale des Petroles d'Aquitaine:*See—*
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Societe Nationale des Petroles d'Aquitaine, Tour d'Aquitaine:*See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation:*See—*
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Solomon, Paul W., to Phillips Petroleum Company. Hydroformylation process and catalyst. 3,636,159, Cl. 260-604.

Sonnenfeld, Richard J., to Phillips Petroleum Company. Pour point depressant. 3,635,685, Cl. 44-62.

Soref, Richard A.: *See—*
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Soref, Samuel M.: *See—*
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Sorm, Frantisek: *See—*
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Soulant, Herman A., Jr.; and Brisker, Henry C. Methods for magnetically measuring stress usine the linear relationship of the third harmonic to stress. 3,636,437, Cl. 324-34.

Sousa, Anthony A.: *See—*
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Spacil, Henry S., to General Electric Company. Solid oxygen-ion electrolyte cell for the dissociation of steam. 3,635,812, Cl. 204-193.

Span, Hylco J. Th.; and Woestenenk, Albert J., to Bitumarin N.V. Bituminous compositions in hydraulic constructions. 3,635,033, Cl. 61-4.

Spangemacher, Kurt, to Maschinenbau-Aktiengesellschaft Balcke. Method and apparatus for withdrawing heat from industrial plants, especially power plants. 3,635,042, Cl. 62-121.

Specht, Wolfgang; and Bertram, Bernd, to S.M.B. Sondermaschinen GmbH. Printing unit interrupter for rotary printing presses. 3,635,160, Cl. 101-247.

Sperry Rand Corporation: *See—*
Banes, Nathan M., Jr.; and Bottcher, James H., 3,636,395.
Caulfield, Henry John; McMahon, Donald H.; and Soref, Richard A.,3,635,538.
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Spitz, Adrian N.: *See—*
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Splitz, Stephen A., to Amicon Corporation. Expanded polyelectrolyte resin and process for making same. 3,635,846, Cl. 260-2.5

Sprague, Theodore S., to Babcock & Wilcox Company, The. Once-through vapor generator. 3,635,287, Cl. 165-134.

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Stamm, Robert Franz; Brinen, Jacob Solomon; Tennant, Evalyn Hosterman; and Halverson, Frederick, to American Cyanamid Company. Photochromic polymer matrix. 3,635,544, Cl. 350-160.

Stamm, Walter, to Stauffer Chemical Company. Stabilized styrene-acrylonitrile polymer compositions. 3,635,883, Cl. 260-45.75

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Standard Products Company, The: *See—*
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Standard Register Company, The: *See—*
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Stanford, Melvin E., to Systomation, Inc. Isolation guarding measuring instrument for in-circuit component testing. 3,636,440, Cl. 324-57.

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Stanley, Paul H., deceased0 (by First Pennsylvania Banking and Trust Co.; executor), to Autogiro Company of America. Rotary wing transport aircraft. 3,635,426, Cl. 244-17.11

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Stark, Hans: *See—*
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Starnes, William H., Jr., to Esso Research and Engineering Company. Polyolefins stabilized with alkenyl phenols. 3,635,885, Cl. 260-45.95

Starnes, William H., Jr.; and Patton, Tad L., to Esso Research and Engineering Company. Polyolefins stabilized with alkenyl phenols. 3,635,886, Cl. 260-45.95

Starp, Franz W. R.; and Racki, Vladimir, to Prontor Werk Alfred Gauthier. Photographic camera with shutter blade system executing reciprocating motion during exposure. 3,635,141, Cl. 95-53.

Starr, Leon; Runyon, David Jon; and Mills, Albert T., to Celanese Corporation. Stabilized oxymethylene polymers. 3,635,882, Cl. 260-45.9

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Stauffer Chemical Company: *See—*
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Kearnan, James E., 3,635,903.
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Toy, Arthur D. F., 3,636,146.
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Stauffer, Dale Adrian, to Miles Laboratories, Inc. Acid addition salts of 5-benzoyl-4-hydroxy-2- methoxybenzensulfonic acid and 4-aminobenzoic acid ester and derivatives thereof. 3,636,077, Cl. 260-471.

Stease, Ralph E. Apparatus for coating and/or impregnating substantially planar articles. 3,635,193, Cl. 118-63.

Stebbins, Ray M. Apparatus for bleeding hydraulic lines. 3,635,262, Cl. 141-98.

Steckler, Steven Alan, to RCA Corporation. Oscillator with variable reactive current frequency control. 3,636,475, Cl. 331-117.

Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Barry, Jude W., to Aerojet-General Corporation. Catalysis of epoxy resin carboxylic acid systems with trivalent chromium III tricarboxylate salts. 3,635,869, Cl. 260-30.4

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Stegelman, Albert F.: *See—*
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Steger, Robert Hugo. Heating devices for vehicle windows. 3,636,311, Cl. 219-522.

Steiger, Werner, to Eidophor, A.G. Television signal conversion apparatus. 3,636,246, Cl. 178-5.4

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Steinmann, Eugene B., Jr. Shaft and cup dent puller. 3,635,072, Cl. 72-457.

Stempler, Samuel; Listl, Carl A.; and Baron, Leonard, to Kollsman Instrument Corporation. Radiation sensitive desynchronization detection system. 3,636,364, Cl. 250-220.

Stephan, Rudolf; Welze, Gerhard; Reinhard, Hans; and Frank, Hans-Ulrich, to Badishe Anilin- & Soda-Fabrik Aktiengesellschaft. Production of bonded nonwovens by the wet method. 3,635,776, Cl. 156-315.

Stephens, Frank H., Jr.; Byrne, Paul B.; and Anderson, Edward P., to Engelhard Minerals & Chemicals Corporation. Electrical ground filter means for boats supplied with a shore-based source of alternating current power. 3,636,409, Cl. 317-18.

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Steppan, Hartmut; Moschel, Albrecht; and Luders, Walter, to Kalle Aktiengesellschaft, mesne. Lightsensitive film element comprising a polyester of a polyhydric alcohol and β-substituted-α-cyan- acylic acid. 3,635,720, Cl. 96-115.

Sterling Drug Inc.: *See—*
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Sterling, John E., to General Electric Company. Household refrigerator including automatic ice maker and door mounted ice storage receptacle. 3,635,043, Cl. 62-137.

Sterling, Walter S., to Pneumatic Scale Corporation. Closure handling apparatus. 3,635,325, Cl. 198-33.

Stern, Lionel; and Hadaway, Bernard Milton, to Richardson, A. T., & Sons Proprietary Limited. Manufacture of ring gear and other ring blanks. 3,635,063, Cl. 72-130.

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Stewart, Luther H., Jr. Lazy susan hot plate. 3,636,299, Cl. 219-201.

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Stieringer, Albert, to Bosch, Robert, Photokino G.m.b.H. Method and means for producing fade-in and fade-out effects with motion picture cameras. 3,635,549, Cl. 352-91.

Stiles, Hallett R.; and Vinatieri, John D., to United States of America, Navy. High-speed rapid response intercommunication system. 3,636,268, Cl. 179-37.

Stine, Laurence O.; and Broughton, Donald B., to Universal Oil Products Company. Process for the production and recovery of ortho-xylene, para-xylene and ethylbenzene. 3,636,121, Cl. 260-674.

Stobb, Anton R., to Stobb, Inc. Sheet feeder off a stack of sheets. 3,635,463, Cl. 271-6.

Stobb, Inc.: *See—*
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Stockebrand, Thomas C., to Digital Equipment Corporation. Position error sensor. 3,636,516, Cl. 340-149.

Stoller, Arthur Irwin; and Schilp, William Henry, Jr., to RCA Corporation. Heat seal of a glass member to another member. 3,635,510, Cl. 287-189.365

Storch, Gunter: *See—*
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Strawn, Charles F.; and Donovan, John C., to Johnson Service Company. Apparatus for measuring small changes in condition sensitive capacitance transducers. 3,636,444, Cl. 324-61.

Streck, Clemens, to GAF Corporation. Process for dyeing polyurethane foam in non- aqueous dye bath. 3,635,652, Cl. 8-4.

Strehlke, Gunter; and Fuchs, Gundolf, to Deutsche Texaco Aktiengesellschaft. Process for production of 1,3-dimethyl-5- isopropylbenzene. 3,636,184, Cl. 260-672.

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Stuart, Alexander: *See—*
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Sugiyama, Takashi; Kurata, Satoshi; and Yamaguchi, Keiki, to Kabushikikaisha Yokogawa Denki Seisakusho (Yokogawa Electric Works, Ltd.). Periodic averaging circuit. 3,636,458, Cl. 328-151.

Suh, John T.: *See—*
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Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; and Yabuuchi, Hiroshi, 3,635,924.
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Suzuki, Shigeru, to Kabushiki Kaisha Ricoh. Sheet-container and-feeding device. 3,635,468, Cl. 271-61.

Suzuki, Takami; and Uozumi, Osamu, to Kabushiki Kaisha Ricoh. Device for determining initial position of cards for use in a data processing equipment. 3,636,316, Cl. 235-61.11

Suzuki, Takashi; and Iesaka, Hiroyuki, to Japan Gas Chemical Company, Inc. Process for producing durene. 3,636,177, Cl. 260-668.

Svoboda, Antonin, to University of California, The Regents of the. Parallel adder with distributed control to add a plurality of binary numbers. 3,636,334, Cl. 235-175.

Swampillai, Christy Edward Selvanayagam; Savage, Eric John; and Lawton, John Edward, to British Insulated Callender's Cables Limited. Gas insulated busbar installation. 3,636,233, Cl. 174-16.

Sweitzer, Stanley E., to Western Electric Company, Incorporated. Methods for selectively coating ferromagnetic articles. 3,635,730, Cl. 117-38.

Swet, Charles J., to United States of America, Navy, mesne. Deployment method for a telescoping solar array. 3,635,425, Cl. 244-1.

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Szymanski, Chester D., to National Starch and Chemical Corporation. Novel converting starch. 3,635,741, Cl. 106-213.

Szymber, Oleg, to GAF Corporation. Automatic focusing system for projectors and the like. 3,635,551, Cl. 353-101.

Tacey, Charles Arthur, to Philograph Publications Limited. Didactic apparatus. 3,636,230, Cl. 35-34.

Tack, Carl E., to Amsted Industries Incorporated. Articulated car auxiliary center bearing. 3,635,168, Cl. 105-4.

Taglieber, Kurt: *See—*
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Tai, Akira: *See—*
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305 3,635,046

CLASS 63
29 3,635,047

CLASS 64
9R 3,635,048
11R 3,635,049
13 3,635,050

CLASS 65
106 3,635,687
183 3,635,688
185 3,635,689

CLASS 66
128 3,635,051
146 3,635,052

CLASS 68
4 3,635,053
43 3,635,054
131 3,635,055
189 3,635,056

CLASS 70
424 3,635,057
459 3,635,058

CLASS 71
1 3,635,690
59 3,635,691
97 3,635,692

CLASS 72
8 3,635,059
20 3,635,060
63 3,635,061
102 3,635,062
130 3,635,063
178 3,635,064
214 3,635,065
239 3,635,066
329 3,635,067
342 3,635,068
345 3,635,069
376 3,635,070
393 3,635,073
453 3,635,071
3,635,074
457 3,635,072

CLASS 73
38 Re.27,277
64.3 3,635,075
88.5R 3,635,077
88.5 3,635,076
89 3,635,078
114 3,635,079
145 3,635,080
151 3,635,081
194M 3,635,082
206 3,635,083
231M 3,635,084
340 3,635,085
343R 3,635,086
343.5 3,635,087
355R 3,635,088
395 3,635,089
398R 3,635,090
421 3,635,091
421.5R 3,635,092
422GC 3,635,093
423A 3,635,094
505 3,635,095

CLASS 74
2 3,635,096
10.33 3,635,097
110 3,635,098
230.7 3,635,099
411 3,635,100
526 3,635,101
600 3,635,102
801 3,635,103

CLASS 75
.5BB 3,635,693
3 3,635,694
6 3,635,695
11 3,635,696
101R 3,635,697
123J 3,635,698
130.5 3,635,699
134 3,635,700
135 3,635,701
159 3,635,702
171 3,635,703

CLASS 81
3 3,635,104
57.18 3,635,105
63 3,635,654
121R 3,635,106
367 3,635,107

CLASS 82
1 3,635,108
2D 3,635,109

CLASS 83
124 3,634,916
149 3,635,110
183 3,635,111
402 3,635,112
406 3,635,114
578 3,635,113
696 3,635,115

CLASS 84
1.23 3,636,231
1.24 3,636,232
291 3,635,116
380 3,635,117
397 3,635,118
411 3,635,119
418 3,635,120
464 3,635,121
477R 3,635,122

CLASS 89
169 3,635,123

CLASS 90
11C 3,635,124

CLASS 91
55 3,635,125

CLASS 92
57 3,635,126
161 3,635,127

CLASS 93
1R 3,635,128
51R 3,635,129

CLASS 94
13 3,635,130
46 3,635,131
48 3,635,132
49 3,635,133
50 3,635,134

CLASS 95
10A 3,635,135
11R 3,635,136
3,635,137
12 3,635,138
13 3,635,139
15 3,635,140
53E 3,635,142
53 3,635,141
89R 3,635,144
97 3,635,143

CLASS 96
1 3,635,704
1.5 3,635,705
1.7 3,635,706
3 3,635,707
27 3,635,708
33 3,635,709
3,635,710
35.1 3,635,711
48 3,635,712
67 3,635,782
85 3,635,713
87A 3,635,714
87R 3,635,715
99 3,635,716
108 3,635,717
111 3,635,718
114.1 3,635,719
115 3,635,720
126 3,635,721

CLASS 99
1 3,635,722
2R 3,635,723
2 3,635,725
17 3,635,726
71 3,635,727
98 3,635,728
107 3,635,731
3,635,732
115 3,635,733
116 3,635,734
135 3,635,735
140R 3,635,736
3,635,737
169 3,635,738
171ND 3,635,724
207 3,635,729
277.1 3,635,145
339 3,635,146
348 3,635,147
404 3,635,148
3,635,149
409 3,635,150

CLASS 100
127 3,635,151
269B 3,635,152

CLASS 101
37 3,635,153
44 3,635,154
93C 3,635,156
93R 3,635,155
114 3,635,157
142 3,635,167
147 3,635,158
232 3,635,159
247 3,635,160
364 3,635,161

CLASS 102
7.6 3,635,162
64 3,635,163

CLASS 104
1 3,635,164
15 3,635,165
56 3,635,185
130 3,635,166

CLASS 105
4R 3,635,168
133 3,635,169
282 3,635,170

CLASS 106
39DY 3,635,739
59 3,635,740
213 3,635,741
287 3,635,742
288B 3,635,744
288Q 3,635,743
3,635,745

CLASS 108
129 3,635,172
136 3,635,173
150 3,635,174

CLASS 110
8A 3,635,176
8R 3,635,175

CLASS 112
79R 3,635,177
132 3,635,178
158B 3,635,179
252 3,635,180

CLASS 114
.5F 3,635,181
.5 3,635,182
16R 3,635,183
51 3,635,184
57 3,635,186
210 3,635,187

CLASS 115
6.1 3,635,188

CLASS 116
114 3,635,189
120 3,635,190

CLASS 117
3.1 3,635,746
36.3 3,635,747
38 3,635,730
46FA 3,635,748
76T 3,635,749
93.31 3,635,750
94 3,635,751
106A 3,635,753
122H 3,635,754
122P 3,635,755
124D 3,635,756
201 3,635,757
212 3,635,758
3,635,759
213 3,635,760
227 3,635,761

CLASS 118
7 3,635,191
50 3,635,192
63 3,635,193
301 3,635,194
637 3,635,195
3,635,196

CLASS 119
17 3,635,197
19 3,635,198
96 3,635,199

CLASS 123
3 3,635,200
130 3,635,201
148E 3,635,202
198D 3,635,203

CLASS 124
16 3,635,204
24 3,635,205

CLASS 125
13 3,635,206
21 3,635,207

CLASS 126
25A 3,635,208
39H 3,635,209
113 3,635,210
121 3,635,211

CLASS 128
2R 3,635,213
2 3,635,212
2.08 3,635,214
130 3,635,215
142.5 3,635,216
145.5 3,635,217
231 3,635,218
266 3,635,219
276 3,635,220
290 3,635,221
304 3,635,222
348 3,635,223
419P 3,635,224

CLASS 131
236 3,635,225
266 3,635,226

CLASS 132
46R 3,635,228
46 3,635,227

CLASS 134
1 3,635,762
58D 3,635,229
168C 3,635,230

CLASS 135
5R 3,635,231
15PE 3,635,232
47.5 3,635,233

CLASS 136
83R 3,635,765
86A 3,635,764
86D 3,635,763
100 3,635,766

CLASS 137
68 3,635,234
81.5 3,635,235
3,635,236
119 3,635,237
195 3,635,238
461 3,635,239
495 3,635,240
505.18 3,635,241
554 3,635,242
583 3,635,243
596 3,635,244
607 3,635,245
608 3,635,246
625.48 3,635,249
625.5 3,635,247
3,635,248
625.63 3,635,250
636 3,635,251
637 3,635,252
799 3,635,253

CLASS 138
45 3,635,254
122 3,635,255
144 3,635,256

CLASS 139
116.5 3,635,257
368 3,635,258
426 3,635,259

CLASS 140
92.2 3,635,260

CLASS 141
3 3,635,261
98 3,635,262
286 3,635,263
291 3,635,264

CLASS 142
38 3,635,265

CLASS 144
2Z 3,635,266
118 3,635,267
134D 3,635,268
309AC 3,635,269

CLASS 146
92 3,635,270
117 3,635,271

CLASS 148
1.5 3,635,767
15.5 3,635,768
32 3,635,769
36 3,635,770
175 3,635,771
187 3,635,772
191 3,635,773

CLASS 151
7 3,635,272

CLASS 152
158 3,635,273
410 3,635,274
429 3,635,275

CLASS 156
17 3,635,774
315 3,635,776
429 3,635,775
499 3,635,777
500 3,635,778
542 3,635,779
583 3,635,780

CLASS 159
29 3,635,276

CLASS 160
191 3,635,277
206 3,635,278

CLASS 161
6 3,635,781
7 3,635,783
43 3,635,784
50 3,635,785
3,635,786
121 3,635,787

CLASS 162
4 3,635,788
5 3,635,789
30 3,635,790

CLASS 164
49 3,635,279
246 3,635,280
258 3,635,791
404 3,635,281

CLASS 165
11 3,635,282
37 3,635,283
39 3,635,284
51 3,635,285
108 3,635,286
134 3,635,287

CLASS 166
156 3,635,288
295 3,635,289

CLASS 169
1 3,635,290

CLASS 172
573 3,635,291

CLASS 173
132 3,635,292

CLASS 174
16B 3,636,233
36 3,636,234
50.56 3,636,235
66 3,636,236
68B 3,636,237
87 3,636,238
3,636,239
92 3,636,240
3,636,241
128 3,636,242

CLASS 175
4.5 3,635,293
65 3,635,294
257 3,635,295
404 3,635,296

CLASS 176
32 3,635,792
87 3,635,793

CLASS 177
5 3,635,297
210 3,635,298

CLASS 178
3 3,636,243
5.2R 3,636,244
5.4CR 3,636,246
5.4MA 3,636,245
5.4ST 3,636,247
6 3,636,248
6.5 3,636,249
3,636,250
6.6DD 3,636,253
6.6A 3,636,258
6.6B 3,636,251
6.6P 3,636,252
6.8 3,636,254
3,636,255
18 3,636,256
66 3,636,257

CLASS 179
1CN 3,636,266
1SB 3,636,261
8A 3,636,259
15BC 3,636,260
18BC 3,636,265
18BD 3,636,267
18ET 3,636,262
18E 3,636,263
18 3,636,264
37 3,636,268
84VF 3,636,269
3,636,270
100.1DR 3,636,271
100.1C 3,636,272
100.2C 3,636,274
100.2T 3,636,275
3,636,277
100.2Z 3,636,273
3,636,276
115.5PV 3,636,278
156 3,636,279
175.3 3,636,280
181W 3,636,281

CLASS 180
14A 3,635,300
19H 3,635,301
44R 3,635,302
75 3,635,303
79 3,635,304
90 3,635,305
110 3,635,306

CLASS 181
31B 3,635,307
33HC 3,635,308
36 3,635,299
55 3,635,309

CLASS 184
3R 3,635,310
11A 3,635,311
11R 3,635,312

CLASS 185
29 3,635,313

CLASS 187
8.62 3,635,794

CLASS 188
1C 3,635,314
189 3,635,315

CLASS 192
3 3,635,316
4A 3,635,317
8R 3,635,318
28 3,635,319
107M 3,635,320

CLASS 194
4C 3,635,321

CLASS 195
2 3,635,795
28R 3,635,796
56 3,635,797
103.5 3,635,798

CLASS 198
31AA 3,635,322
33AA 3,635,324
33 3,635,323
3,635,325
52 3,635,326
126 3,635,327
161 3,635,328
213 3,635,329

CLASS 200
16R 3,636,282
51R 3,636,285
61.48 3,636,283
67DA 3,636,284
69 3,636,286
83SA 3,636,288
83D 3,636,289
83P 3,636,287
144B 3,636,292
166BG 3,636,291
166D 3,636,290

CLASS 202
83 3,635,799

CLASS 203
10 3,635,800

CLASS 204
49 3,635,801
56R 3,635,802
80 3,635,803
128 3,635,804
143R 3,635,805
159.14 3,635,806
162 3,635,807
180G 3,635,808
181 3,635,809
3,635,810
192 3,635,811
193 3,635,812
197 3,635,813

CLASS 206
.82 3,635,335
3 3,635,330
45.34 3,635,331
46FR 3,635,332
52W 3,635,333
57 3,635,334
62R 3,635,608

CLASS 208
10 3,635,814
95 3,635,815
157 3,635,943

CLASS 209
3 3,635,336
3,635,337
11 3,635,338
121 3,635,339
130 3,635,340

CLASS 210
2 3,635,816
26 3,635,817
31C 3,635,818
40 3,635,819
54 Re.27,275
61 3,635,820
75 3,635,341
84 3,635,342
104 3,635,343
169 3,635,344
198C 3,635,345
208 3,635,346
242 3,635,347
333 3,635,348
527 3,635,349

CLASS 211
34 3,635,353
40 3,635,350
42 3,635,351
47 3,635,352
177 3,635,354
183 3,635,355

CLASS 213
64 3,635,356
3,635,357
69 3,635,358

CLASS 214
6B 3,635,359
8.5F 3,635,360
10.5R 3,635,361
38A 3,635,362
52C 3,635,363
138 3,635,364
515 3,635,366
778 3,635,365

CLASS 215
100A 3,635,367

CLASS 219
10.49 3,636,293
60A 3,636,294
69C 3,636,295
69S 3,636,296
85 3,636,297
108 3,636,298
121P 3,636,300
137 3,636,301
201 3,636,299
271 3,636,302
3,636,303
3,636,304
3,636,305
361 3,636,306
370 3,636,307
439 3,636,308
452 3,636,309
501 3,636,310
522 3,636,311
523 3,636,312

CLASS 220
6 3,635,368
42B 3,635,369
46R 3,635,370
69 3,635,371

CLASS 222
3 3,635,372
57 3,635,373
78 3,635,374
94 3,635,375
107 3,635,376
145 3,635,377
333 3,635,378
402.22 3,635,379
484 3,635,380

CLASS 224
1 3,635,381
45P 3,635,382

CLASS 225
37 3,635,383

CLASS 226
49 3,635,384
97 3,635,385
135 3,635,386
141 3,635,387

CLASS 228
2 3,635,388
3 3,635,389
8 3,635,390
24 3,635,391

CLASS 229
14C 3,635,450
17S 3,635,393
37R 3,635,451
40 3,635,452
85 3,635,392

CLASS 233
26 3,635,394

CLASS 235
1A 3,635,395
61.11D 3,636,313
61.11E 3,636,316
61.12M 3,636,318
61.12N 3,636,317
61.6R 3,636,314
61.7B 3,636,3.5
70R 3,635,396
78 3,635,397
88 3,635,398
92EA 3,636,319
95 3,636,320
105 3,635,399
150.1 3,636,322
150.2 3,636,321
3,636,324
150.25 3,636,323
150.27 3,636,330
151 3,636,325
151.1 3,636,328
151.12 3,636,326
3,636,331
151.33 3,636,327
155 3,636,329
156 3,636,333
175 3,636,334
193 3,636,335
195 3,636,332
197 3,636,336
3,636,337
3,636,338

CLASS 239
15 3,635,400
3,635,401
18 3,635,402
90 3,635,403
265.15 3,635,404
428.5 3,635,405
490 3,635,406
514 3,635,407

CLASS 240
3 3,636,339
7.1LJ 3,636,343
9R 3,636,340
11.4H 3,636,341
52.1 3,636,342

CLASS 241
1 3,635,408
43 3,635,409
56 3,635,410

CLASS 242
1 3,635,411
20 3,635,412
54 3,635,413
55.19A 3,635,414
64 3,635,415
71.4 3,635,416
78.8 3,635,417
84.21R 3,635,418
107.4 3,635,419
3,635,420
118.6 3,635,421
118.8 3,635,422
198 3,635,423
3,635,424

CLASS 244
1 3,635,425
17.11 3,635,426
17.27 3,635,427
77 3,635,428
93 3,635,429

CLASS 246
40 3,636,344

CLASS 248
102 3,635,430
104 3,635,431
188.6 3,635,432
309 3,635,433
352 3,635,434
475A 3,635,435

CLASS 250
41.9D 3,636,345
49.5A 3,636,346
51.5 3,636,347
52 3,636,348
61.5 3,636,349
65R 3,636,351
65T 3,636,350
80 3,636,352
83.1 3,636,353
83.3H 3,636,354
102 3,636,355
199 3,636,356
210 3,636,357
211J 3,636,358
217 3,636,359
218 3,636,360
219DF 3,636,361
219FR 3,636,362
220R 3,636,364
223R 3,636,363
227 3,636,365
3,636,366
237 3,636,367

CLASS 251
31 3,635,436
48 3,635,437
137 3,635,438
315 3,635,439

CLASS 252
8.1 3,635,821
8.5A 3,635,822
32.5 3,635,823
75 3,635,825
79.4 3,635,826
89 3,635,827
99 3,635,828
156 3,635,830
301.1R 3,635,831
301.3R 3,635,832
301.4R 3,635,833
314 3,635,834
315 3,635,835
316 3,635,836
397 3,635,837
415 3,635,838
429B 3,636,019
429 3,635,839
430 3,635,840
466PT 3,635,841
512 3,635,824
526 3,635,829

CLASS 254
93R 3,635,440
138 3,635,441
168 3,635,442

CLASS 259
3 3,635,443
4 3,635,444
22 3,635,445
54 3,635,446
107 3,635,447
108 3,635,448
179 3,635,449

CLASS 260
2BP 3,635,842
2N 3,635,843
3,635,844
3,635,845
2.5AB 3,635,848
2.5AM 3,635,851
2.5FP 3,635,847
3,635,850
2.5B 3,635,849
3,635,852
2.5R 3,635,846
8 3,635,853
17R 3,635,855
17.4SG 3,635,856
17.4 3,635,857
22M 3,635,859
22R 3,635,858
23.7R 3,635,860
27BB 3,635,862
27 3,635,861
3,635,863
28.5AS 3,635,864
3,635,865
28.5R 3,635,866
29.4UA 3,635,867
29.6RW 3,635,868
30.4EP 3,635,869
30.8 3,635,870
32.6 3,635,871
32.8R 3,635,872
33.8R 3,635,873
37EP 3,635,875
37GB 3,635,874
37 3,635,876
38 3,635,877
40R 3,635,878
41AG 3,635,879
45.7R 3,635,880
45.75K 3,635,883
45.8N 3,635,881
45.8 3,636,031
45.85 3,635,884
45.9P 3,635,882
45.95 3,635,885
3,635,886
3,636,035
46.5G 3,635,887
47CP 3,635,888
3,635,892
47EP 3,635,891
47ET 3,635,890
47XA 3,635,895
47C 3,635,893
47U 3,635,889
47 3,635,894
65 3,635,896
67UA 3,635,898
67A 3,635,897
75AC 3,635,906
75M 3,635,899
3,635,901
75R 3,635,900
3,635,902
75S 3,636,131

77.5AA 3,635,904
3,635,908
77.5AM 3,635,907
77.5R 3,635,905
78A 3,635,909
78L 3,635,913
78R 3,635,910
3,635,911
3,635,912
78.5CL 3,635,914
78.5R 3,635,915
78.5T 3,635,916
79.3M 3,635,917
79.5B 3,635,903
3,635,918
3,635,920
80.78 3,635,919
3,635,921
83.7R 3,635,922
84.3 3,635,923
85.5XA 3,635,924
85.5 3,635,925
87.5A 3,635,926
88.7 3,635,927
92.8 3,635,928
3,635,929
93.7 3,635,930
94.2 3,635,931
94.7A 3,635,933
3,635,934
94.7R 3,635,932
94.9GD 3,635,938
94.9C 3,635,937
94.9R 3,635,936
94.9 3,635,935
152 3,635,939
155 3,635,940
3,635,941
157 3,635,942
191 3,635,944
210R 3,635,945
211.5R 3,635,946
239BD 3,635,948
3,635,949
239A 3,635,947
3,635,950
239B 3,635,951
3,635,952
239.1 3,635,953
239.55 3,635,954
240D 3,635,958
3,635,959
3,635,960
240G 3,635,955
240K 3,635,956
240R 3,635,957
243B 3,635,962
243C 3,635,961
246 3,635,963
247.1 3,635,964
3,635,965
247.5R 3,635,966
3,635,967
248CS 3,635,969
248A 3,635,968
249.6 3,635,970
250R 3,635,971
3,635,972
251.5 3,635,973
253 3,635,974
256.4C 3,635,978
256.4Q 3,635,979
256.4 3,635,976
256.5R 3,635,975
3,635,977
257 3,635,980
268PH 3,635,982
268TR 3,635,983
270R 3,636,007
279 3,635,981
286R 3,635,984
287R 3,635,985
3,635,986
293.59 3,635,989
293.61 3,635,991
293.68 3,635,988
293.71 3,635,990
294.8E 3,635,987
294.8F 3,635,992
3,635,994
294.8G 3,635,995
297H 3,635,993
297Z 3,635,996
302A 3,635,997
307D 3,635,998
307R 3,635,999
308C 3,636,000
308R 3,636,001
3,636,004
309 3,636,002
3,636,003
309.2 3,636,005
309.7 3,636,039
314.5 3,636,040
326.1 3,636,042
326.3 3,636,043
326.5FM 3,636,044
326.5SA 3,636,045
326.9 3,636,046
327TH 3,636,049
327C 3,636,048
327P 3,636,047
330.5 3,636,050
332.2C 3,636,041
332.3R 3,636,052
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340.7 3,636,054
340.9 3,636,055
343.2R 3,636,058
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346.8 3,636,057
347.4 3,636,059
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348.6 3,636,060
349 3,636,062
365 3,636,063
374 3,636,064
376 3,636,065
378 3,636,006
380 3,636,008
396N 3,636,009
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397.3 3,636,011
397.4 3,636,012
397.5 3,636,013
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448.2N 3,636,025
448.8R 3,636,026
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3,636,075
3,636,076
471C 3,636,079
471R 3,636,077
3,636,078
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475R 3,636,082
482C 3,636,084
482P 3,636,083
486R 3,636,086
497R 3,636,087
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502.6 3,636,089
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514P 3,636,093
514R 3,636,091
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524R 3,636,095
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982 3,636,145
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CLASS 270

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53 3,635,467
61 3,635,468

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148A 3,635,478

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CLASS 277

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11.35C 3,635,485
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CLASS 294

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106 3,635,514

CLASS 296

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23 3,635,516
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137R 3,635,519

CLASS 297

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125 3,635,521
153 3,635,522
220 3,635,523
284 3,635,524
354 3,635,525
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410 3,635,527
456 3,635,528

CLASS 301

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CLASS 303

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21P 3,635,530

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18 3,636,433

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3,636,485
219 3,636,486
270 3,636,487

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244 3,636,491

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198R 3,636,502
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256SP 3,636,505

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59 3,636,509
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81 3,636,511
146.3AC 3,636,513
146.3F 3,636,512
147 3,636,514
148 3,636,515
149 3,636,516
150 3,636,517
166 3,636,518
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173FF 3,636,527
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173LM 3,636,526
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174TF 3,636,531
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174M 3,636,532
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174.1H 3,636,536
174.1M 3,636,535
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206 3,636,538
210 3,636,539
228 3,636,540
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409 3,636,560

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91	3,635,549
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21	3,635,550
101	3,635,551
CLASS 355	
3	3,635,553
8	3,635,554
	3,635,555
16	3,635,556
65	3,635,557
72	3,635,558
85	3,635,559
86	3,635,560
CLASS 356	
85	3,635,561
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112	3,635,562
114	3,635,563
128	3,635,564
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170	3,635,566
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132	3,635,567

CLASS 402	
17	3,635,568
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35	3,635,569
43	3,635,570
97	3,635,571
181	3,635,572
186	3,635,573
197	3,635,574
CLASS 415	
1	3,635,575
65	3,635,576
79	3,635,577
90	3,635,578
119	3,635,579
150	3,635,580
169	3,635,581
170	3,635,582
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48	3,635,583
	3,635,584
96	3,635,585
97	3,635,586
	3,635,587

187	3,635,588
193	3,635,589
223	3,635,590
CLASS 417	
53	3,635,599
62	3,635,600
191	3,635,601
201	3,635,602
282	3,635,603
304	3,635,604
315	3,635,605
360	3,635,606
394	3,635,607
410	3,635,591
413	3,635,592
417	3,635,593
420	3,635,594
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459	3,635,596
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183	3,636,202
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211	3,636,204
	3,636,205
219	3,636,206
	3,636,207
229	3,636,208
	3,636,209
238	3,636,210
240	3,636,211
244	3,636,212
245	3,636,213
	3,636,214
	3,636,215
258	3,636,216
263	3,636,217
	3,636,218
265	3,636,219
267	3,636,222

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270	3,636,224
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60	3,635,612
62	3,635,613
71	3,635,614
	3,635,615
77	3,635,616
78	3,635,617
109	3,635,618
112	3,635,619
113	3,635,620
	3,635,621
116	3,635,622
123	3,635,623

133	3,635,624
135	3,635,625
136	3,635,626
141	3,635,627
151	3,635,628
173	3,635,629
175	3,635,630
200	3,635,171
223	3,635,631
297	3,635,632
302	3,635,633
325	3,635,634
326	3,635,635
	3,635,636
363	3,635,637
373	3,635,638
384	3,635,639
445	3,635,640
461	3,635,641
470	3,635,642
	3,635,643
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9	3,635,644
67	3,635,645
89	3,635,646
95	3,635,647
170	3,635,648
269	3,635,649
278	3,635,650
328	3,635,651

CLASSIFICATION OF DESIGNS

D 8—	21	222,849	258	222,853	D14— 3	222,857	59	222,861	17	222,865	15	222,868
D 9—	1	222,850	D13— 1	222,854	24	222,858	D24— 1	222,862	19	222,866	D52— 6	222,869
	111	222,851		222,855		222,859		222,863	D34— 4	222,867	D81— 10	222,870
	185	222,852		222,856	D23— 35	222,860	D33— 13	222,864				

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PATENTS

1 : 3,636,154	3,635,338	3,636,087	3,634,908	3,635,631	3,634,961
2 : 3,635,424	3,635,345	3,636,091	3,634,922	3,635,851	3,634,963
4 : 3,635,035	3,635,350	3,636,101	3,634,926	3,635,906	3,635,050
3,635,114	3,635,351	3,636,162	3,634,942	3,635,912	3,635,068
3,635,428	3,635,359	3,636,206	3,634,943	3,635,919	3,635,080
3,635,492	3,635,375	3,636,212	3,635,012	3,635,920	3,635,126
3,635,896	3,635,380	3,636,250	3,635,065	3,635,926	3,635,128
3,636,377	3,635,414	3,636,268	3,635,093	3,635,935	3,635,150
3,636,510	3,635,469	3,636,278	3,635,097	3,636,005	3,635,157
3,636,541	3,635,470	3,636,280	3,635,322	3,636,054	3,635,168
3,636,550	3,635,472	3,636,289	3,635,370	3,636,082	3,635,170
3,636,553	3,635,480	3,636,299	3,635,372	3,636,108	3,635,232
6 : 3,634,891	3,635,482	3,636,314	3,635,398	3,636,122	3,635,236
3,634,903	3,635,490	3,636,323	3,635,543	3,636,136	3,635,269
3,634,904	3,635,499	3,636,333	3,635,544	12 : Re.27,275	3,635,277
3,634,911	3,635,500	3,636,334	3,635,567	3,634,958	3,635,297
3,634,914	3,635,511	3,636,353	3,635,602	3,634,987	3,635,330
3,634,924	3,635,526	3,636,359	3,635,628	3,634,989	3,635,331
3,634,939	3,635,529	3,636,361	3,635,630	3,634,996	3,635,356
3,634,953	3,635,534	3,636,376	3,635,632	3,635,072	3,635,357
3,634,969	3,635,537	3,636,400	3,635,682	3,635,129	3,635,360
3,634,985	3,635,556	3,636,414	3,635,790	3,635,237	3,635,363
3,634,990	3,635,563	3,636,450	3,635,811	3,635,462	3,635,394
3,635,015	3,635,565	3,636,451	3,635,825	3,635,649	3,635,397
3,635,016	3,635,571	3,636,456	3,635,837	3,635,661	3,635,437
3,635,027	3,635,576	3,636,469	3,635,881	3,635,816	3,635,447
3,635,075	3,635,599	3,636,479	3,635,947	3,636,070	3,635,455
3,635,105	3,635,610	3,636,493	3,635,961	3,636,096	3,635,476
3,635,106	3,635,622	3,636,496	3,635,972	3,636,100	3,635,478
3,635,112	3,635,640	3,636,502	3,635,979	3,636,201	3,635,494
3,635,118	3,635,659	3,636,528	3,636,027	3,636,215	3,635,495
3,635,130	3,635,666	3,636,530	3,636,028	3,636,266	3,635,501
3,635,137	3,635,669	3,636,535	3,636,029	3,636,281	3,635,506
3,635,145	3,635,671	3,636,536	3,636,049	3,636,336	3,635,515
3,635,188	3,635,678	3,636,545	3,636,061	3,636,362	3,635,528
3,635,189	3,635,690	3,636,546	3,636,104	3,636,383	3,635,548
3,635,195	3,635,728	3,636,547	3,636,117	3,636,391	3,635,551
3,635,207	3,635,737	3,636,559	3,636,145	3,636,395	3,635,619
3,635,212	3,635,781	3,636,562	3,636,146	3,636,480	3,635,650
3,635,216	3,635,794	8 : 3,635,092	3,636,147	13 : 3,635,177	3,635,696
3,635,228	3,635,799	3,635,140	3,636,261	3,635,258	3,635,724
3,635,245	3,635,808	3,635,166	3,636,279	3,635,673	3,635,726
3,635,265	3,635,813	3,635,512	3,636,473	3,635,779	3,635,734
3,635,283	3,635,869	3,635,516	3,636,474	3,636,457	3,635,780
3,635,290	3,635,891	3,635,550	3,636,494	3,636,460	3,635,815
3,635,299	3,635,937	3,635,581	3,636,540	16 : 3,635,471	3,635,820
3,635,308	3,635,994	3,636,124	3,636,557	3,635,729	3,635,823
3,635,314	3,636,036	3,636,312	10 : 3,635,086	17 : Re.27,276	3,635,838
3,635,320	3,636,060	3,636,380	3,635,158	3,634,900	3,635,877
3,635,327	3,636,062	9 : 3,634,897	3,635,393	3,634,955	3,635,971
3,635,335	3,636,071	3,634,906	3,635,620	3,634,956	3,636,014

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Robert Gottschalk, *Commissioner*